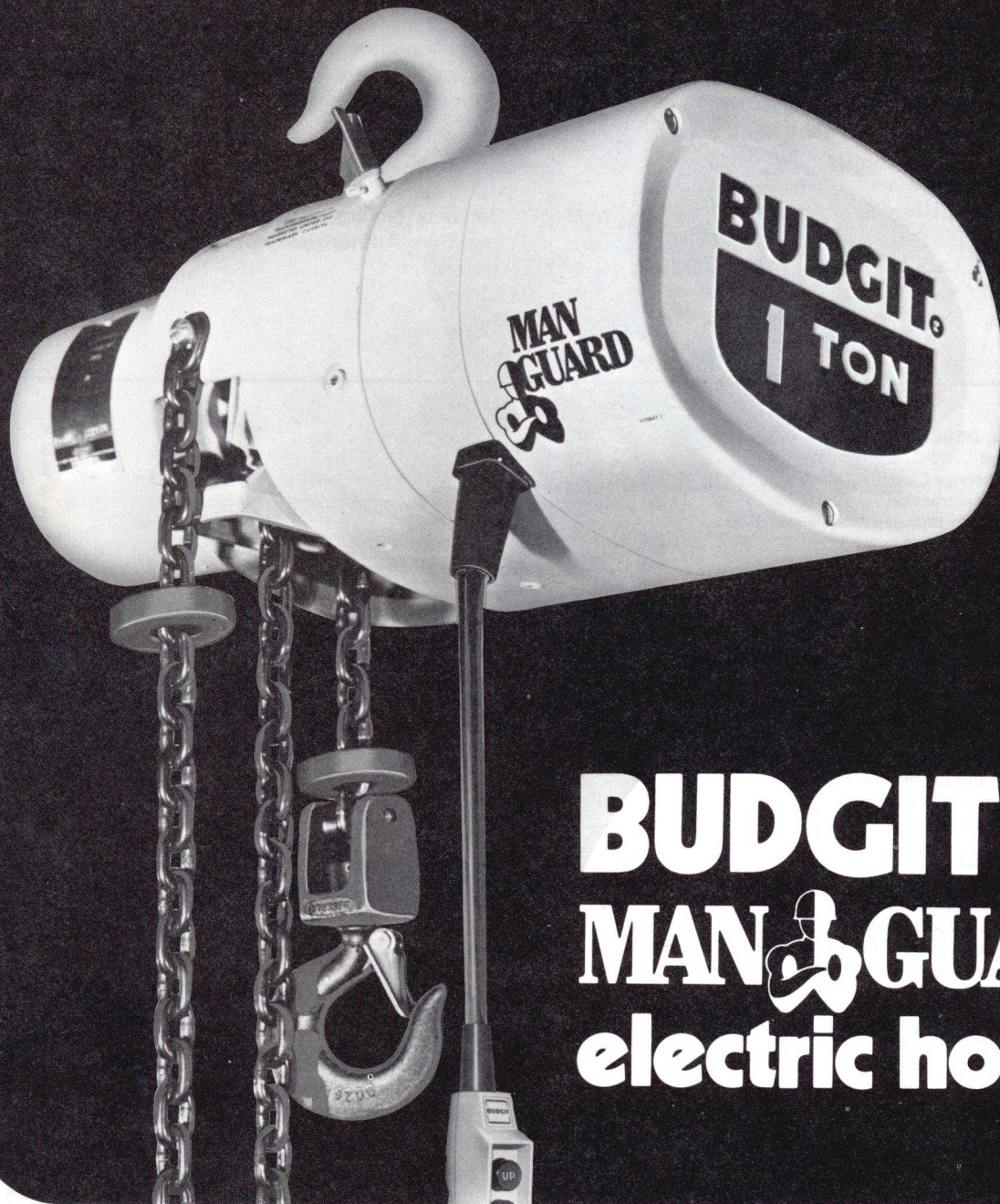


# OPERATION SERVICE & PARTS MANUAL



## **BUDGIT<sup>®</sup>** **MAN & GUARD<sup>™</sup>** **electric hoists**

**BUDGIT**

**DRESSER**

**CRANE & HOIST OPERATIONS • DRESSER INDUSTRIES, INC.**  
MUSKEGON, MICHIGAN 49443

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## FOREWORD

This book contains important information to help you install, operate, maintain and service your new Electric Hoist. We recommend that you study its contents thoroughly before putting your hoist into use. Then, thru proper installation, application of correct operating procedures, and by practicing the recommended maintenance suggestions you will be assured maximum lifting service from the hoist.

Complete inspection, maintenance and overhaul service is available for **BUDGIT** Electric Hoists at Authorized Repair Stations. See accompanying list. All are staffed by qualified factory-trained service men; have authorized testing equipment; and stock a complete inventory of factory approved **BUDGIT** replacement parts.

Complete replacement parts information is given in Section IX. It will likely be a long time before parts information is needed, therefore, after you have completely familiarized yourself with operation and preventive maintenance procedures, we suggest that this instruction and parts manual be carefully filed for future reference.

**NOTICE:** Use only factory approved **BUDGIT** replacement parts, available from Authorized Repair Stations or **BUDGIT** Hoist Distributors.

| INDEX               |                                                                                 | Page  |
|---------------------|---------------------------------------------------------------------------------|-------|
| <b>SECTION I</b>    | <b>GENERAL DESCRIPTION</b>                                                      |       |
| Paragraph 1-1       | General . . . . .                                                               | 3     |
| Paragraph 1-2       | Hoist Service Classification . . . . .                                          | 3     |
| Paragraph 1-3       | Basic Construction . . . . .                                                    | 3     |
| Paragraph 1-4       | Differences Between Models and Sizes . . . . .                                  | 4     |
| Paragraph 1-5       | MAN-GUARD Overload Clutch . . . . .                                             | 4     |
| <b>SECTION II</b>   | <b>INSTALLATION</b>                                                             |       |
| Paragraph 2-1       | General . . . . .                                                               | 4     |
| Paragraph 2-2       | Installation . . . . .                                                          | 4-5   |
| Paragraph 2-3       | Pre-Installation Checks . . . . .                                               | 5     |
| Paragraph 2-4       | Connecting Hoist to Electrical Service . . . . .                                | 5-6   |
| <b>SECTION III</b>  | <b>OPERATION</b>                                                                |       |
| Paragraph 3-1       | General . . . . .                                                               | 6     |
| Paragraph 3-2       | Operating Hoist . . . . .                                                       | 6     |
| Paragraph 3-3       | Pulling and Pivoting Hoist and Load . . . . .                                   | 6     |
| Paragraph 3-4       | Upper and Lower Limit Stops . . . . .                                           | 6     |
| Paragraph 3-5       | MAN-GUARD Overload Clutch Operation . . . . .                                   | 7     |
| Paragraph 3-6       | Operating Precautions . . . . .                                                 | 7     |
| <b>SECTION IV</b>   | <b>LUBRICATION</b>                                                              |       |
| Paragraph 4-1       | General . . . . .                                                               | 7     |
| Paragraph 4-2       | Change Gear Case Oil . . . . .                                                  | 7     |
| Paragraph 4-3       | Lubricate Load Chain . . . . .                                                  | 7-8   |
| Paragraph 4-4       | Lubricate Upper Hook and Lower Block Assembly . . . . .                         | 8     |
| Paragraph 4-5       | Lubricate Limit Lever Control Shaft and Gears . . . . .                         | 8     |
| <b>SECTION V</b>    | <b>MAINTENANCE</b>                                                              |       |
| Paragraph 5-1       | General . . . . .                                                               | 8     |
| Paragraph 5-2       | Thirty-Day Inspection . . . . .                                                 | 8-10  |
| Paragraph 5-3       | Six-Month Inspection . . . . .                                                  | 11    |
| Paragraph 5-4       | Inspection — 5000 Hour or Five Year . . . . .                                   | 11    |
| <b>SECTION VI</b>   | <b>TROUBLE SHOOTING CHART</b> . . . . .                                         | 12-13 |
| <b>SECTION VII</b>  | <b>DISASSEMBLY AND REASSEMBLY</b>                                               |       |
| Paragraph 7-1       | General . . . . .                                                               | 13    |
| Paragraph 7-2       | Disassembly of Hoist Into Subassemblies . . . . .                               | 14-17 |
| Paragraph 7-3       | Rebuild of Hoist Frame, Sprocket Gear, Sprocket Shaft and Chain Guide . . . . . | 17-19 |
| Paragraph 7-4       | Rebuild of Load Brake and Overload Clutch Assembly . . . . .                    | 19-21 |
| Paragraph 7-5       | Rebuild of Lower Block and Load Chain Assembly . . . . .                        | 21-22 |
| Paragraph 7-6       | Rebuild of Electrical Controls and Gear Case Cover Subassembly . . . . .        | 22    |
| Paragraph 7-7       | Rebuild of Push Button Station and Conductor Cable Assembly . . . . .           | 23    |
| Paragraph 7-8       | Rebuild of Contactor Assembly (Push Button Models) . . . . .                    | 23    |
| Paragraph 7-9       | Rebuild of Single Phase Motor Assembly . . . . .                                | 24    |
| Paragraph 7-10      | Rebuild of Three Phase Motor Assembly . . . . .                                 | 24    |
| Paragraph 7-11      | Reassembly of Hoist From Subassemblies . . . . .                                | 24-25 |
| Paragraph 7-12      | Testing Hoist . . . . .                                                         | 25    |
| Paragraph 7-13      | Test Procedure For Checking Operation of Overload Clutch . . . . .              | 25-26 |
| <b>SECTION VIII</b> | <b>WIRING DIAGRAMS</b> . . . . .                                                | 27-30 |
| <b>SECTION IX</b>   | <b>REPLACEMENT PARTS</b> . . . . .                                              | 30-48 |

**NOTICE:** Information contained in this book is subject to change without notice.

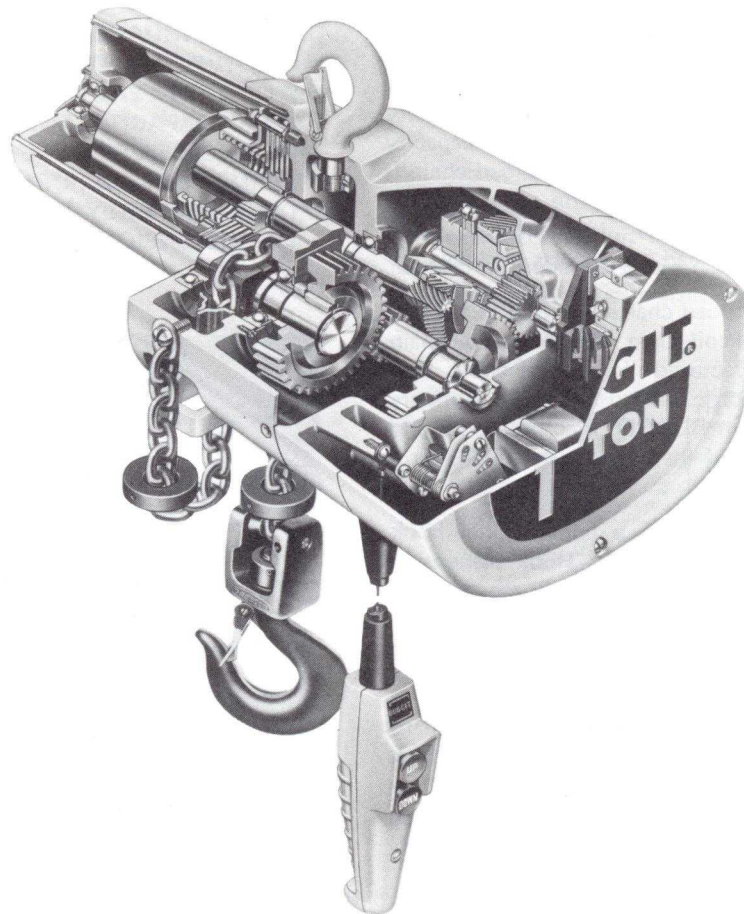


Figure 1-1. CUTAWAY VIEW OF TYPICAL BUDGIT ELECTRIC HOIST

## SECTION I - GENERAL DESCRIPTION

1-1. GENERAL. **BUDGIT** Portable Electric Hoists are precision built chain type hoists ranging in five capacity sizes from 1/4 ton thru 3 tons with various lifting speeds and electrical power supplies. In addition to the capacities, there are model variations with roller or coil type load chains, and hook or lug type suspension. In addition to standard models, there are four capacity sizes of Extra Heavy Duty **BUDGIT** Electric Hoists ranging from 1/4 ton thru 2 tons (suitable for plating hoist service) with various lifting speeds and electrical power. Extra Heavy Duty Hoists are available only with coil type load chains with hook or lug type suspensions.

### 1-2. HOIST SERVICE CLASSIFICATION

a. Standard single phase hoists are designed to operate at a maximum of 20% "ON-TIME" (motor actually running) and up to 200 motor actuations per hour with mean effective load of 65% of rated hoist capacity.

b. Standard three phase hoists are designed to operate at a maximum of 40% "ON-TIME" (motor actually running)

and up to 400 motor actuations per hour with mean effective load of 65% of rated hoist capacity.

c. Extra Heavy Duty Hoists are designed to operate at a maximum of 70% "ON-TIME" (motor actually running) and up to 1200 motor actuations per hour with a mean effective load of 65% of rated hoist capacity.

1-3. BASIC CONSTRUCTION. All sizes and models of these **BUDGIT** Electric Hoists are of the same basic design, having many common and interchangeable parts. They consist primarily of an aluminum alloy frame and gear case cover which houses an automatic load brake and gear train. An electric driving motor and disc type motor brake are mounted on the rear of the frame. Electrical control components are mounted on front of the gear case cover and encased by aluminum alloy end cover. An upper hook or lug bracket for suspending the hoist is attached to the top of the frame. Either a special nickel steel roller load chain or alloy steel coil load chain with lower block assembly is employed to raise and lower loads. A block and chain operated limit stop lever is mounted on the bottom of the hoist frame and is connected, by linkage, to a limit switch. Hoist operation is controlled by a pendant push button station.



#### 1-4. DIFFERENCES BETWEEN MODELS AND SIZES.

The main differences between hoist models are in the service classification, type of load chain and the suspension employed. These are described in paragraphs (a) thru (d), below. The differences between sizes of hoists are in the number of gear reductions used and the reeving of the load chain. Two-reduction gearing is used for 1/4 thru 1/2 ton capacity hoists; three-reduction gearing for 1, 2 and 3 ton capacity hoists. On 1/4 thru 1 ton capacity hoists, the load chain is single reeved (one part of chain); on 2 ton capacities, the chain is double reeved (two parts of chain); on 3 ton capacities, the chain is triple reeved (three parts of chain).

a. Two different types of load chains are used as the lifting medium, roller chain and coil chain. The roller type chain is a special precision manufactured nickel steel chain. Coil type chain is full-flexing electric welded link chain. Both are especially designed for use in **BUDGIT** Electric Hoists and only factory approved chain of the correct size, pitch, hardness and strength can be used with these hoists.

b. Suspension differences include a conventional hook type mounting and a lug type mounting. Hook suspension allows portability permitting hoist to be easily moved from job to job. Lug suspension permits hoist to be rigidly mounted to overhead structure or attached to **BUDGIT** Rigid Mount Trolleys, affording unusual headroom advantage.

c. Extra heavy duty hoists are adaptations of standard model hoists to permit use in corrosive atmospheres, high ambient temperatures and high duty cycle operation. They are available only in coil chain models in either hook or lug suspension. Construction variations from standard models are as follows:

(1) Load chain is cadmium plated for corrosion resistance.

(2) All exposed aluminum parts are prime painted with corrosion resistant paint.

(3) Push Button Control station is molded neoprene and is vapor resistant.

(4) Motor is fan cooled, especially designed for extra heavy duty service. Bearings are lifetime lubricated with high - temperature grease.

d. Extra Heavy Duty Hoists are identified by a suffix (-4, -5, -7) after the hoist catalog number stamped on the nameplate located on the motor. Dash 4 indicates hook suspension, dash 5 indicates lug suspension for manual trolleys, and dash 7 indicates lug suspension for motor driven trolleys.

1-5. **MANGUARD OVERLOAD CLUTCH.** **BUDGIT** Electric Hoists having a **MANGUARD** label on the sides of the electrical compartment cover (figure 1-2) are equipped with an overload clutch that is designed to help guard against excessive overloads. The clutch is built into the load brake gear. It is a cone-friction clutch that connects the first reduction gear (load brake gear) to the load brake output pinion shaft. A Belleville disc spring provides clutch pressure between the gear and its cone shaped gear center. An excessive overload causes the load brake gear to rotate without turning the gear center and output pinion shaft. The clutch is located between the load brake and the motor, thus allowing both load brake and motor brake to function in their normal manner. See paragraph 3-5 for operation.

### WARNING

THE **MANGUARD** OVERLOAD CLUTCH IS A PROTECTIVE DEVICE THAT WILL PERMIT OPERATION OF YOUR HOIST WITHIN ITS RATED LOAD CAPACITY AND WILL PREVENT LIFTING OF EXCESSIVE OVERLOADS WHICH CAN CAUSE PERMANENT DEFORMATION OR WEAKENING OF A PROPERLY MAINTAINED HOIST AND/OR ITS SUSPENSION.



Figure 1-2. **MANGUARD** Hoist Identification

## SECTION II - INSTALLATION

2-1. **GENERAL.** **BUDGIT** Electric Hoists are completely lubricated and load tested under their own power before being shipped from the factory. To place hoist in service, attach to suitable overhead suspension (par. 2-2) in area to be used; make pre-installation check (par. 2-3); and connect to nearest electrical service outlet (par. 2-4).

### 2-2. INSTALLATION.

a. On hook suspended hoists, select a suitable overhead support in area hoist is to be used (one capable of holding weight of hoist and its capacity load) and hang up hoist. Be certain upper hook is firmly seated in center of hook saddle. Upper hook is equipped with a spring type hook latch; it may be necessary to remove latch to attach hook to support. Replace latch after hoist is installed.

b. On lug suspended hoists, select a suitable overhead support in area hoist is to be used (one capable of holding weight of hoist and its capacity load). Mount hoist using thru bolts, of appropriate size, to fit mounting holes in suspension lug at top of hoist frame. (See table below.) The structure used to suspend hoist must be of sufficient strength to withstand reasonable forces to which hoist and support may be subjected. Hoist must be aligned with load to avoid side pulls.

c. On lug suspended hoists, the suspension lug may be



installed for cross mounting or parallel mounting of the hoist. To rotate hoist 90° follow the instructions below:

(1) On 1/4 thru 1 ton hoists remove suspension lug per instructions in Section VII, paragraph 7-3, c, (1) and figure 7-23. Lift lug from hoist frame, rotate to desired position and replace on locating pins. Insert suspension bolt and nut. Turn nut on top of lug while holding nut inside of hoist frame with drift until grooved pin holes are aligned.

### WARNING

Be certain to replace grooved pin thru nut and suspension bolt.

(2) On 2 ton hoists, remove hex socket head screw in lower lock plate. Remove lower lock plate. Rotate suspension lug to selected position and replace lock plate and hex socket head screw.

(3) On 3 ton hoists, the hanger bracket must first be removed from the hoist to provide access to suspension nut per Section VII, par. 7-2, a, (4) and figures 7-2 and 7-3. To remove lug bolt, follow instructions in Section VII, par. 7-3, b, (3). With bolt removed lift lug from hanger and reposition as desired. The lug is located and prevented from turning by integral lugs on adjacent surfaces of the lug and the hanger. Re-install lug bolt, spherical washers and nut. Align hole in nut and lug bolt. Reassemble hanger bracket to hoist.

### WARNING

Be certain to replace grooved pin thru nut and lug bolt.

d. On rigid mount trolley suspended hoists, the trolley side plates must be properly spaced so trolley will fit I-beam on which hoist will operate. Adjustment for various I-beam sizes is accomplished by rearrangement of spacer washers on thru bolts which connect trolley side plates to suspension lug on hoist. Refer to instruction sheet furnished with **BUDGIT** Rigid Mount Trolleys for complete instructions.

#### SUSPENSION LUG BOLT SIZES AND SPACING

| Hoist Capacity<br>Tons | Bolt Diameter<br>Inches | Distance<br>Between Holes<br>Inches |
|------------------------|-------------------------|-------------------------------------|
| 1/4, 1/2, & 1          | 5/8                     | 3-1/8                               |
| 2                      | 1                       | 5                                   |
| 3                      | 1-1/4                   | 6                                   |

#### 2-3. PRE-INSTALLATION CHECK.

**Check Oil Level.** (Fig. 4-1) The gear case has been filled with oil, to the proper level at the factory. However, the oil level should be checked before hoist is operated.

Remove and discard felt shipping plug from oil filler on side of hoist frame. Check oil level by removing oil level plug (side of frame). Observe if oil level is even with bottom of tapped hole. If it is not, add oil, as specified in paragraph 4-2., c. Also check load chain. Be sure it is properly lubricated. See paragraph 4-3.

#### 2-4. CONNECTING HOIST TO ELECTRICAL SERVICE.

a. All hoists are equipped with a flexible power cable extending from the hoist. A grounding type male plug or permanent connection in an outlet box may be used for connecting hoist to power supply. See table (fig. 2-1) for branch circuit conductor sizes.

| H.P.  | Power Supply  | AWG WIRE SIZE |      |     |     |     |     |
|-------|---------------|---------------|------|-----|-----|-----|-----|
|       |               | #16           | #14  | #12 | #10 | #8  | #6  |
| 1/4   | 115-1-60      | *             | 55   | 90  | 145 | 230 | 370 |
|       | 230-1-60      | *             | 245  | 395 | 620 | 995 |     |
|       | 208, 230-3-60 | 145           | 235  | 375 | 590 |     |     |
|       | 460, 575-3-60 | 730           | 1160 |     |     |     |     |
| 1/2   | 115-1-60      | *             | 45   | 70  | 115 | 185 | 290 |
|       | 230-1-60      | *             | 195  | 315 | 495 | 790 |     |
|       | 208, 230-3-60 | 145           | 235  | 375 | 590 |     |     |
|       | 460, 575-3-60 | 730           | 1160 |     |     |     |     |
| 1     | 230-1-60      | *             | 120  | 190 | 305 | 475 |     |
|       | 208, 230-3-60 | 105           | 170  | 270 | 430 |     |     |
|       | 460, 575-3-60 | 485           | 770  |     |     |     |     |
| 2 1/2 | 208, 230-3-60 | 41            | 66   | 108 | 170 |     |     |
|       | 460, 575-3-60 | 164           | 264  |     |     |     |     |

\*Do not use.

Figure 2-1. Branch Circuit Conductor Size. Maximum length in feet for minimum wire size based on Horsepower and power supply. Wire size for entire length of branch circuit and permanent wiring to main feeder. Power supply measured at hoist, while running and with normal load, must not vary more than  $\pm 5\%$  of voltage on motor nameplate.

b. Follow local & National Electrical Codes when providing electrical service to hoist. Connect power wires in accordance with appropriate wiring diagram shown in Section VIII. Power supply must be the same voltage, frequency and phase as specified on the hoist nameplate.

### WARNING

The green wire provided in the power supply cable is a grounding wire and must be connected to a proper ground. (Follow local code requirements and/or National Electrical Code Par. 250-57 or 250-59).

c. Dual voltage hoists with re-connectable 230/460 volts, 3 phase, 60 hertz are (unless otherwise specified on customer's order) shipped from factory pre-connected for operation on 460 volts. If hoist is to be operated on 230 volts convert wiring by changing connections on terminal board. With hoist disconnected from power source, remove electrical compartment cover and reconnect terminal board leads as directed in figure 8-5. Also refer to Wiring Diagram, figure 8-4.



## WARNING

Three phase hoists must be properly phased each time they are installed or moved to a new power source or when service is performed on mainline. Unless this is done, serious damage to the hoist can occur with resulting hazard to operator and load.

d. To properly phase the hoist follow these steps:

- (1) Temporarily connect hoist to power source.
- (2) Operate "UP" button briefly to determine direction of travel.
- (3) If hook raises, phase is correct and temporary connections should be made permanent.
- (4) IF HOOK LOWERS, HOIST IS "REVERSED PHASED" AND MUST BE CORRECTED BY INTERCHANGING ANY TWO LEADS AT POWER SOURCE CONNECTION. DO NOT CHANGE INTERNAL WIRING OF HOIST.

(5) The Instruction Tag for proper phasing should be removed from the "DOWN" push button after it has been determined that hoist is correctly phased.

## SECTION III - OPERATION

3-1. GENERAL. Operation of **BUDGIT** Electric Hoists is controlled by a push button station suspended from the hoist electrical compartment. The station has a built-in mechanical interlock to prevent depressing both buttons simultaneously.

### 3-2. OPERATING HOIST.

- a. Depress push button marked "UP" to raise load.
- b. Depress push button marked "DOWN" to lower loads.
- c. Jogging the push buttons will give "hairline" load movement. The quickness of the depressing motion will determine the amount of movement. Excessive use of this "jogging" feature will cause premature burning of contact points, motor overheating, and rapid motor brake wear.

### 3-3. PULLING AND PIVOTING HOIST AND LOAD.

a. The push button station conductor cable has a built-in strain cable suitable for pulling trolley suspended hoists when not loaded. Do not use for pulling bridge cranes. Push on load or load chain or use a hand geared or motor driven type trolley to traverse loaded hoists.

b. To pivot hoist and load, push on one corner of load. The lower hook will pivot thru 360 degrees to permit load to be swung to the desired position. The upper hook (hook suspension models) is also designed to rotate so that side pulls will swing hoist to face load, thus reducing side thrust. Upper hook rotation is restricted to about 340° on 1/4 thru 1 ton capacity hoists to prevent conductor cord from winding around hoist or chain. 2 & 3 Ton Capacity hoists have full rotation.

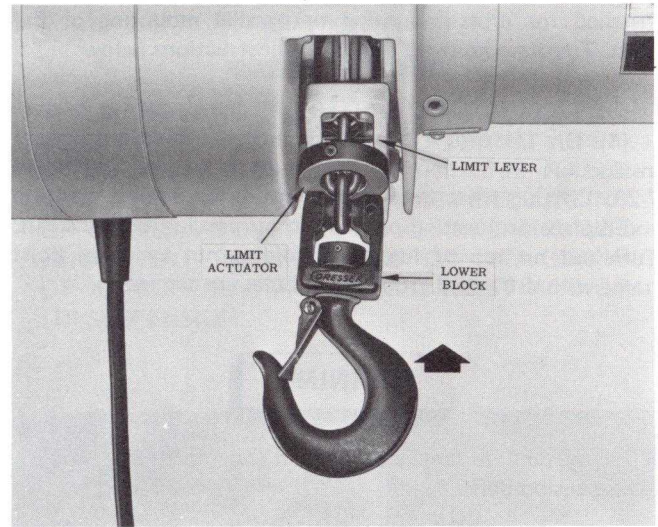


Figure 3-1. Limit Lever Being Tripped By Actuator Above Lower Block on Single Line Hoist.

3-4. UPPER AND LOWER LIMIT STOPS. A lower block and chain operated limit stop is provided to guard against overtravel of load in either raising or lowering direction, which can cause damage to hoist. When highest position is reached, limit actuator on the load chain, above the lower block, trips the limit lever (fig. 3-1). When lowest position is reached, a limit actuator on the tail end of load chain trips the limit lever (fig. 3-2). The limit lever is connected to a limit switch that automatically stops the hoist motor. This is intended as a safety device and should not be used on a routine basis to stop travel of lower block or shut off hoist.

NOTE: On lug type, coil chain hoists, the limit lever may be tripped by the load chain during side pulls. Load must be lined up with hoist. If moderate side pulls cannot be avoided, rotate hoist 90° so it is mounted with side of hoist facing direction of side pull. See appropriate instruction in Section II, paragraph 2-2, c.

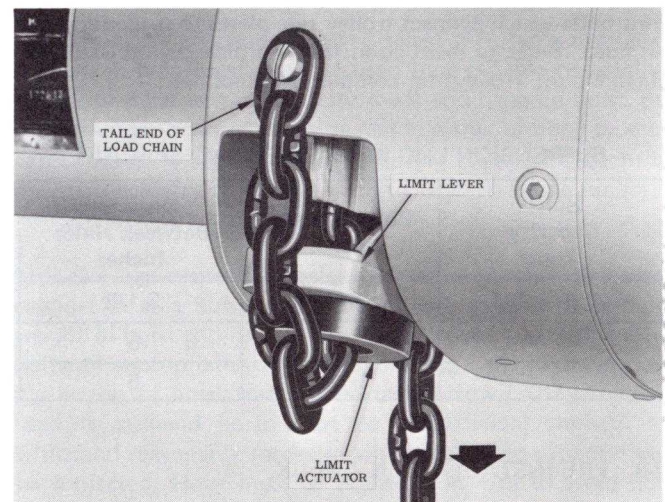


Figure 3-2. Limit Lever Being Tripped By Actuator on Tail End of Load Chain.



**3-5. MANGUARD OVERLOAD CLUTCH OPERATION.** The overload clutch is factory preset at assembly so that the hoist will lift its full rated load but will refuse to lift overloads within a range of 110 percent rated load to 180 percent rated load. If the load to be lifted exceeds the clutch factory setting, the motor will continue to run and will rotate the load brake gear without lifting the load. Whenever this occurs, immediately release the "UP" push button to prevent overheating of the clutch friction surfaces and motor.

### NOTICE

Always know load to be lifted. Dresser Industries does not recommend lifting loads greater than the rated capacity of your hoist.

### 3-6. OPERATING PRECAUTIONS.

#### WARNING

Equipment covered herein is not designed or suitable as a power source for lifting or lowering persons.

Safe operation of an overhead hoist is the operator's responsibility. Listed below are some basic rules that can make an operator aware of dangerous practices to avoid and precautions to take for his own safety and the safety of others. Observance of these rules in addition to frequent examinations and periodic inspection of the equipment may save injury to personnel and damage to equipment.

- a. Personnel not physically fit or properly qualified, shall not operate hoist.
- b. Operate hoist cautiously to become familiar with its performance.
- c. Do not lift loads greater than the hoist rated capacity.
- d. Never lift or transport a load until all personnel are clear. Never lift people on hook or load.
- e. Stand clear of all loads and never travel loads over people.
- f. When lifting load make certain it is free to move and will clear all obstructions.
- g. Do not divert attention from load while operating hoist. Never leave a suspended load unattended.
- h. Do not operate hoist unless upper and lower limit switch stops are operating properly.
- j. Do not use limit switch stops as normal operating stops. This is a safety device only.
- k. Take up chain slack carefully to avoid jerking load, possibly overloading hoist.
- l. Never use hoist chain as a sling or electrical ground for welding.
- m. Always be sure there is no twist in coil load chain. On 2 & 3 ton coil chain hoists, check to see that lower block is not capsized between strands of chain.
- n. Avoid operating hoist when hook is not centered under hoist. Be sure that hoist trolley or other support mechanism is correctly positioned for handling the load before lifting.
- o. Do not operate hoist with twisted, kinked, badly worn or damaged chain.
- p. Do not operate damaged or malfunctioning hoist.

q. Always operate hoist within recommended duty cycle and do not "jog" unnecessarily.

r. Conduct regular visual inspections for signs of damage or wear.

s. Observe recommended inspection and maintenance procedures.

t. Use common sense and best judgment whenever operating a hoist. Observe American National Standard Safety standard, ANSI B30.16, latest issue.

## SECTION IV - LUBRICATION

**4-1. GENERAL.** The lubrication services outlined in paragraphs 4-2 thru 4-5 should be performed at regular intervals to maintain top hoist performance and insure long life. The frequency for lubrication services will depend on the type of hoisting service that hoist is subjected to and should coincide with periodic preventive maintenance inspection. See Section V - Maintenance.

### 4-2. CHANGE GEAR CASE OIL (Fig. 4-1)

- a. Remove drain plug from bottom of hoist frame and drain oil from gear case. Replace plug.
- b. Remove oil level plug from side of hoist.

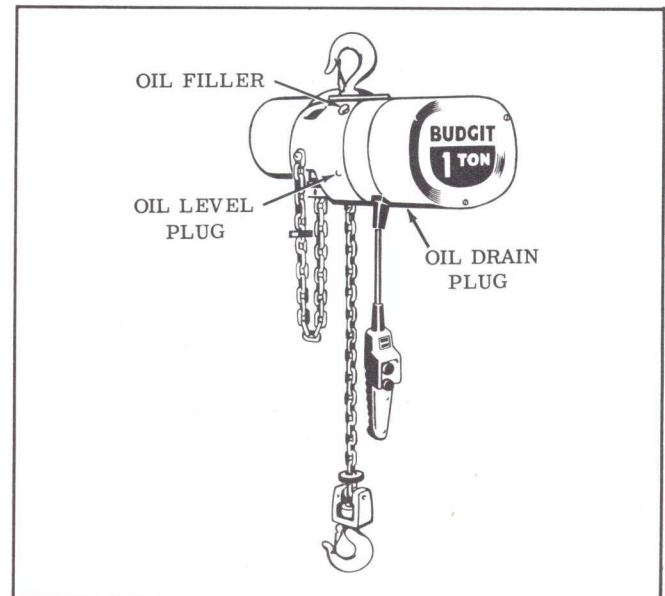


Figure 4-1. Location of Oil Filler and Plugs

c. Refill gearcase thru oil filler to proper level (bottom of oil level plug hole) using Automatic Transmission Fluid - DEXRON<sup>®</sup> Type. This is an all-weather oil available from all major oil companies. 1-1/2 pints of oil are required.

<sup>®</sup> Registered trademark of G.M.C.

d. Reinstall oil level plug.

**4-3. LUBRICATE LOAD CHAIN.** A small amount of lubricant will greatly increase load chain life, therefore, chain should not be allowed to run without lubricant. Chain should be cleaned and lubricated as directed in paragraphs a. and b. below, depending upon type of chain. User should set up a regular schedule for chain lubrication after observing operating conditions for a few days.

a. Coil Chain. Under ordinary conditions only weekly attention will be necessary. Under hot and dirty conditions it may be necessary to clean chain at least once a day and



lubricate it several times between cleanings. Thoroughly clean chain with an oil solvent and relubricate by coating it lightly with graphite suspension oil. Make sure that lubricant coats wear surfaces between links. On Extra Heavy Duty Hoists load chain should be cleaned and lubricated daily.

b. **Roller Chain.** Under ordinary conditions only monthly attention will be necessary. Under hot and dirty conditions weekly attention may be required. Thoroughly clean chain with an oil solvent and apply a good grade of S.A.E. #20 motor oil. Wipe off excess oil. When subjected to excessive moisture or corrosive atmospheres, DO (dripless oil) lubricant from American Grease Stick Company is recommended for use on roller chain in place of regular motor oil.

#### 4-4. LUBRICATE UPPER HOOK AND LOWER BLOCK ASSEMBLY.

a. Apply a few drops of graphite suspension oil on shank of upper hook where it enters frame.

b. Apply a few drops of graphite suspension oil on shank of lower hook where it enters lower block. Hook rotation bearing may be removed for cleaning and relubricating if necessary. See paragraph 7-5., a., d.

c. On lower block assemblies of 2 & 3 ton capacity hoists, also apply a good grade of bearing grease thru pressure fitting in end of sprocket pin to lubricate bearing in chain sprocket.

d. On 3 ton models lubricate sprocket in hanger bracket with a few drops of graphite suspension oil in hole provided in center of sprocket hub.

#### 4-5. LUBRICATE LIMIT LEVER CONTROL SHAFT AND GEARS

Apply a few drops of graphite suspension oil on limit lever shaft at bearing points.

### WARNING

Before performing any internal work on hoist, be certain power is shut off. Lock main service switch in the open position.

## SECTION V - MAINTENANCE

5-1. **GENERAL.** Preventive maintenance services required on **BUDGIT** Electric Hoists are for the most part, simple periodic inspection procedures to determine condition of hoist components. Below are suggested inspection procedures, based on daily average hoist usage.

5-2. **THIRTY-DAY INSPECTION.** Hoist may be left suspended.

#### a. Inspect Load Chain.

(1) Operate hoist under load and observe operation of chain over sprocket in both directions of chain travel. Chain should feed smoothly into and away from the sprocket. If chain binds, jumps or is noisy, first see that it is clean and properly lubricated. If trouble persists, inspect chain as outlined below, depending on type of chain.

(2) **Coil Type Load Chain.** Clean chain for inspection. Examine visually for gouges, nicks, weld splatter, corrosion or distorted links. Slacken chain and check bearing surfaces between links for wear, figure 5-1. Greatest wear will often occur at sprocket at high or low point of lift, particularly when hoist is subjected to repetitive lifting cycles. Case hardness of chain is about .015" deep. Chain must be replaced before the case is worn thru. Also check chain for elongation using a vernier caliper (Figure 5-2). Select an unworn, unstretched section of chain (usually at slack or tail end) and measure and record the length over the number of chain links (pitches) indicated in figure 5-2. Measure and record the same length of a worn section in the load side of the chain. Obtain the amount of wear by subtracting the measurement of the unworn section from the measurement of the worn section. If the result (amount of wear) is greater than the amount specified in the "ALLOWABLE CHAIN WEAR" table, the chain has elongated beyond the maximum allowable length and must be replaced. Chain with excessively pitted, corroded, nicked, gouged, twisted or worn links should be replaced using only factory approved chain. Never weld or attempt to repair coil chain.

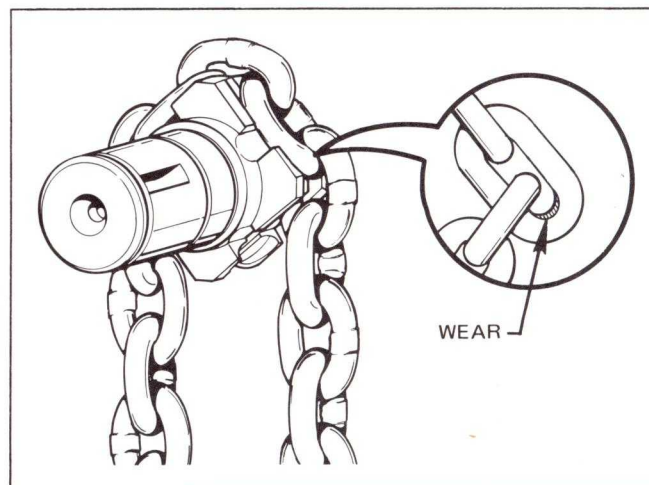


Figure 5-1. Check Chain Wear at Bearing Surfaces Between Links.

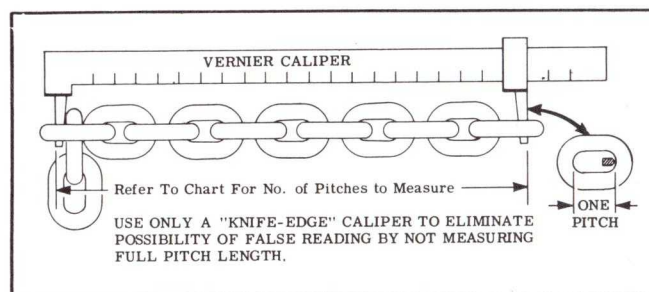


Figure 5-2. Checking Coil Chain Using Vernier Caliper



## ALLOWABLE CHAIN WEAR - ELONGATION

| HOIST CAP.<br>(TON) | CHAIN SIZE<br>(WIRE DIA.) | NO. OF PITCHES<br>TO MEASURE | MAXIMUM<br>WEAR LIMIT |
|---------------------|---------------------------|------------------------------|-----------------------|
| 1/4 & 1/2           | 1/4"                      | 13                           | .145"                 |
| 1, 2, 3             | 5/16"                     | 11                           | .142"                 |

### CAUTION

Do not assume that load chain is safe because it measures below replacement points given herein. Other factors, such as those mentioned in visual checks above, may render chain unsafe or ready for replacement long before elongation replacement is necessary.

### WARNING

When replacing coil load chain, use only factory approved chain conforming to factory specifications for material, hardness, strength and link dimensions. Chain not conforming to BUDGIT hoist specifications may be dangerous as it will not fit in the load sprocket and chain guide correctly, causing damage to hoist, and it will wear prematurely, deform and eventually break.

### (3) Removing and Replacing Coil Load Chain.

(a.) Replacement coil load chain is installed by attaching it to tail end of old chain, after disconnecting old chain from side of hoist frame and removing limit actuator. New chain is then run into hoist as old chain is run out. Use open "C" links, figures 5-3 and 5-4, for attaching chains. Links must be identical in size to hoist chain — 1/4" wire size with .745" pitch length for 1/4 thru 1/2 ton models 5/16" wire size with .858" pitch length for 1, 2 & 3 ton models. Be certain that all welds on links of replacement chain face away from center of load sprocket.

(b.) Remove lower block assembly and actuator from old chain and attach them to replacement chain at end which was just run thru hoist. Install limit actuator (as noted below) on other end of chain and anchor chain to side of hoist frame.

### CAUTION

Two "C" links must be used on 1/4, 1/2, and 1 ton capacity hoists (fig. 5-4) in order to correctly position end link on tail end of chain to fit tail end anchor at side of hoist frame; only one "C" link is required on 2 and 3 ton capacity hoists.

NOTE: Install limit actuator on the 8th link from the end and secure with grooved pin.

On 2 ton double reeved models, also connect opposite end of chain (from lower block) to load chain anchor inside of frame. On 3 ton triple reeved models, the opposite end of the chain is attached to the lower block connecting link.

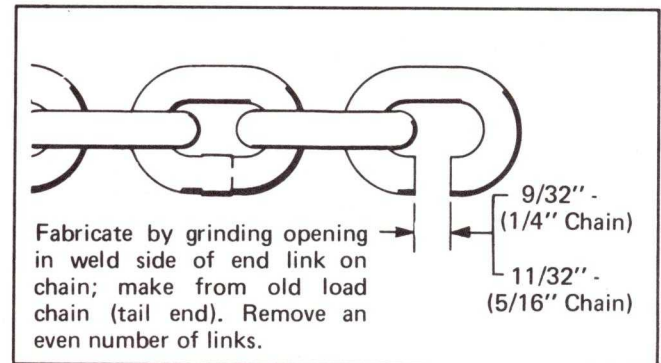


Figure 5-3. Open "C" Link for Removing and Installing Coil Load Chain

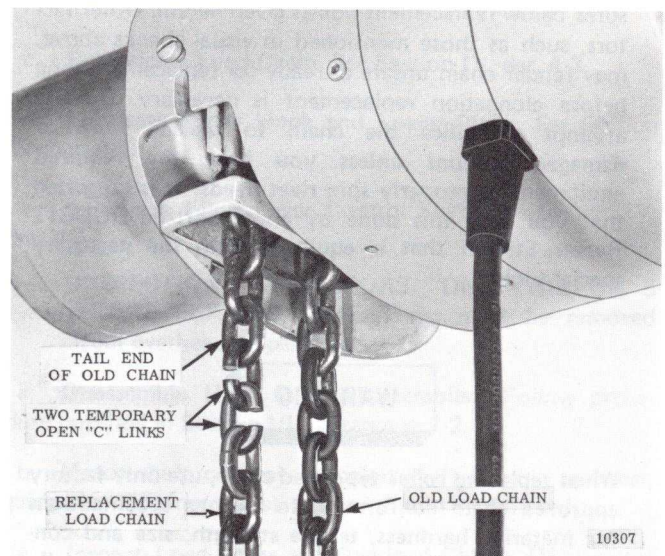


Figure 5-4. Installing Coil Load Chain Using Two "C" Links (1/4, 1/2, 1 ton hoists)

NOTE: In the event the old chain is to be removed from hoist and reinstalled, a short length of chain (about 18" long) must be run into hoist when the old chain is removed. This short length can then be used in the same manner as shown in paragraph 5-2. a.(3). Be sure to use the proper number of open "C" links in order to correctly position end link on tail end of chain to fit anchor at side of hoist frame.

### WARNING

When installing coil load chain do not attempt to hand feed chain into hoist, or use a piece of wire in place of the method described herein. To do so may result in serious internal damage to hoist, as coil chain links must be properly seated in chain sprocket before chain is run into hoist.



(4) **Roller Type Load Chain.** Visually check for possible twists, broken links, wear or elongation. Any links that do not flex easily, even when lubricated, may be damaged and should be replaced. Check roller chains for elongation from wear by pulling chain taut and measuring as follows: On RC-625, 625 or H-5 size chain (5/8" pitch), measure distance over a length of 20 pitches (center-to-center distance between 21 rivets) - it must not exceed 12-3/4 inches. On RC-750, H-6 or HF size chain (3/4" pitch) measure length of 16 pitches (center-to-center distance between 17 rivets) - it must not exceed 12-1/4 inches. If chain exceeds the limit, replace damaged section or install new load chain assembly. Check chain for twist. If twist in any 5 foot extension exceeds 15 degrees, replace chain. Check chain for camber. If any section has side bow exceeding 1/4 inch in five feet, replace chain.

#### CAUTION

Do not assume that load chain is safe because it measures below replacement points given herein. Other factors, such as those mentioned in visual checks above, may render chain unsafe or ready for replacement long before elongation replacement is necessary. **Do not attempt to splice the chain to replace worn or damaged sections unless you have the required equipment to properly spin rivet heads.** It is suggested that you have this done by an authorized BUDGIT Repair Station that is equipped with the necessary special tools.

#### WARNING

When replacing roller type load chain, use only factory approved chain conforming to factory specifications for material, hardness, tensile strength, size and construction. BUDGIT Hoist Roller chain is specially designed for hoisting service and is the only type roller chain that can safely be used with BUDGIT electric hoists. Chain not conforming to BUDGIT Roller Chain specifications may be dangerous as it will not withstand heavy impact loads and does not have adequate tensile strength.

(5) Check anchor end of chain at side of hoist frame for damage to last link, also connecting link on roller chain hoists. Replace damaged parts.

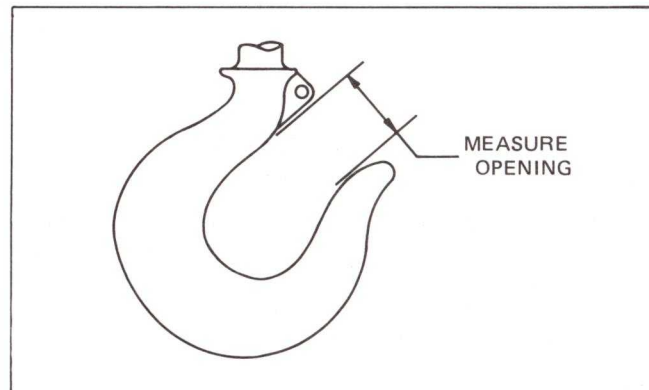
(6) Check connection of chain to lower block on 1/4 thru 1 ton and 3 ton capacity hoists. Replace parts showing evidence of damage, twisting or elongation.

(7) Check connection of chain to anchor inside hoist frame on double-reeved, 2-ton capacity hoists. Replace parts showing evidence of damage, twisting or elongation. (Also see Sec. VII, par. 7-2a, 2).

(8) Lubricate load chain before using hoist. See par. 4-3, Section IV.

#### b. Inspect Lower Block.

(1) Check for bent or distorted hook. If hook is opened beyond the dimension given in figure 5-5, it must be replaced. Also check to see that hook swivels and is free to pivot. Lubricate these points if necessary.



| HOIST CAPACITY (TONS) | HOOK THROAT OPENING |                                         |
|-----------------------|---------------------|-----------------------------------------|
|                       | NORMAL OPENING      | REPLACE HOOK IF OPENING IS GREATER THAN |
| 1/4, 1/2              | 1-1/8               | 1-1/4                                   |
| 1                     | 1-1/4               | 1-7/16                                  |
| 2                     | 1-3/8               | 1-9/16                                  |
| 3                     | 1-1/2               | 1-11/16                                 |

Figure 5-5. Lower Hook Opening

(2) On 2-ton capacity hoists, check sprocket and bearing in lower block for freedom of movement and signs of damage. Lubricate if necessary. Replace damaged parts.

(3) Check hook latches. Replace damaged or bent latches or broken springs.

#### CAUTION

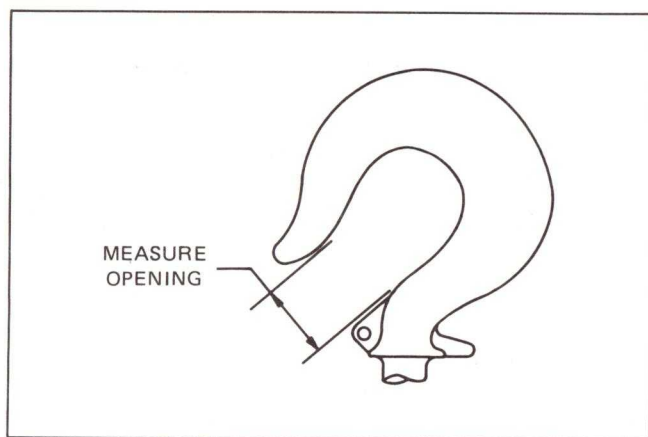
Hooks, upper or lower, damaged from chemicals, deformation or cracks or having more than 15 percent in excess of normal throat opening or more than 10 degrees twist from the plane of the unbent hook, or opened, allowing the hook latch to bypass hook tip must be replaced.

Any hook that is twisted or has excessive throat opening indicates abuse or overloading of the hoist. Other load bearing components of the hoist should be inspected for damage. (See Section V, par. 5-2, d, (2) below).

#### c. Inspect Upper Suspension.

(1) On hook suspended models, check for bent or distorted hook. If hook is opened beyond the dimension given in figure 5-6, it must be replaced. Also check to see that hook pivots. Lubricate if necessary. 1/4 thru 1 ton capacity hoists have a stop pin installed in frame adjacent to hook to restrict hook rotation. Check to see that pin is not sheared off and stop lug on hook shank is not broken.





| HOIST<br>CAPACITY<br>(TONS) | HOOK THROAT OPENING |                                            |
|-----------------------------|---------------------|--------------------------------------------|
|                             | NORMAL<br>OPENING   | REPLACE HOOK IF OPENING<br>IS GREATER THAN |
| 1/4, 1/2 & 1                | 1-1/4               | 1-7/16                                     |
| 2                           | 1-3/8               | 1-9/16                                     |
| 3                           | 1-1/2               | 1-11/16                                    |

Figure 5-6. Upper Hook Opening

(2) On lug suspended models, check condition of suspension lug. Replace lug if damaged or cracked. Check to see that lock plate is in place on lug and screw holding it is tight.

(3) On 2-ton capacity hoists, check to see that upper lock plate securing hook or lug bushing is in place and screws holding it are tight. Lubricate hook shank.

(4) Check hook latch. Replace damaged or broken parts.

**d. Inspect Motor, Frame and Electrical Compartment Cover.**

(1) Check to see that bolts securing motor to frame are tight. Also check for any visible damage to motor, such as a cracked end bell or dented stator housing. Replace damaged parts.

(2) Check hoist frame for signs of visible damage. If frame shows evidence of fracture, the hoist should be disassembled and inspected for further signs of damage from possible overloading. Replace damaged parts. Also check condition of limit lever.

(3) Check for possible damage to electrical compartment cover. Be sure screws holding cover are tight.

e. **Check Oil Level.** Remove oil level plug (fig. 4-1). If oil level is not even with bottom of tapped hole, add Automatic Transmission Fluid, DEXRON<sup>®</sup> Type, to bring to proper level.

**5-3. SIX-MONTH INSPECTION OR 500-750 HOURS OF OPERATION.** Hoist may be left suspended.

a. **Inspect Electrical Controls.** Shut off power supply to hoist and remove electrical compartment cover from hoist. Use caution as some covers contain counterweights.

(1) Check all wiring and terminals. Insulation should be

sound and terminals securely crimped to wires. Terminal screws should be tight and plug-type terminals completely mated. Replace terminals or wires as necessary.

(2) Check control circuit transformer for evidence of overheating. Replace if necessary.

(3) Check control shaft centering spring by operating limit lever. If limit lever does not return to neutral position after it is tripped, the spring is probably broken or control shaft is bent. Replace broken or damaged parts.

(4) Check limit switch to see that wires are securely soldered and mounting screws are tight.

(5) Check condition of contactor assembly. If contact points are excessively burned or pitted they should be replaced. Check contactor solenoid coils and replace coils if they show evidence of overheating.

(6) Check control cable wire strain reliever to see that it is in good condition and securely attached to gear case cover. Replace rubber strain reliever grommets if damaged.

b. **Change Gear Case Oil.** See Section IV, par. 4-2.

c. **Relubricate Load Chain.** See Section IV, par. 4-3.

d. **Lubricate Upper Hook and Lower Block.** See Section IV, par. 4-4.

e. **Lubricate Limit Lever Control Shaft.** See Section IV, par. 4-5.

**5-4. INSPECTION: 5000 HOURS "ON" TIME OR 5 YEARS ELAPSED TIME.** Hoist must be removed from overhead suspension.

a. **Disassemble Hoist into Subassemblies.** Follow procedure outlined in Section VII, paragraph 7-2.

b. Motor shaft oil seal, sprocket shaft bearing and seal, guide pin "O" rings and all gaskets should be replaced.

c. **Inspect Load Brake and Overload Clutch.** Disassemble load brake and clutch assembly as outlined in paragraph 7-4. Friction discs should be discarded and replaced with new discs. Check load brake friction surfaces on flange, ratchet assembly and gear clutch cone. Replace parts if badly scored or worn. Check condition of pawl and ratchet assembly. If pawl, ratchet teeth or pawl spring are broken, damaged or badly worn, replace complete assembly. Check contact faces of load brake cam and gear clutch cone. Brake gear and pinion teeth should be inspected for wear or broken teeth. Clean parts thoroughly with an oil solvent before reassembly.

**NOTE:** The overload clutch assembly should not be disassembled as it is preset at the factory to provide proper clutch pressure for a specific hoist capacity range. If there is evidence of the clutch slipping or wear or damage to the clutch components, the complete clutch assembly should be replaced or sent to an authorized **BUDGIT** Hoist Repair Station to be rebuilt and properly adjusted to factory specifications.

d. **Inspect Sprocket and Intermediate Gears.**

(1) On 1, 2 and 3 ton capacity hoists, check condition of gear teeth on intermediate gear and pinion shaft assembly. Replace worn or damaged parts.



(2) Check condition of teeth or pockets on chain sprocket (all capacities). Replace worn or damaged parts.

e. **Inspect Motor Brake.** For access to motor brake parts, remove motor assembly as outlined in paragraphs 7-2, d. Then, remove brake parts following instructions given for the specific type brake, depending upon model of hoist. Check braking surfaces for wear and scoring. Replace badly worn or scored parts. Check to see that plate support pins inside

frame are tight. Check large compression spring and spring plunger. Replace parts that are worn or damaged.

f. **Reassemble and Test Hoist.** Reassemble hoist from subassemblies following procedure outlined in paragraph 7-11. After assembly is complete, test hoist as outlined in paragraphs 7-12 and 7-13.

## SECTION VI - TROUBLE SHOOTING

| Trouble                             | Probable Cause                                                                                                                                                                                                                                                                                                                              | Remedy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6-1. Hoist Will Not Operate.        | <ul style="list-style-type: none"> <li>a. No power to hoist.</li> <li>b. Wrong voltage.</li> <li>c. Blown control circuit fuse</li> <li>d. Loose or broken wire connections in hoist electrical system.</li> <li>e. Contactor assembly not functioning.</li> <li>f. Defective Control transformer.</li> <li>g. Motor burned out.</li> </ul> | <ul style="list-style-type: none"> <li>a. Check switches, circuit breakers and connections in power supply lines. Check power collectors.</li> <li>b. Check voltage required on motor data plate against power supply.</li> <li>c. Check control circuit for shorts and for burned out transformer or solenoid coils.</li> <li>d. Shut off power supply, remove electrical cover from hoist and check wiring connections. Also check connections in push button station and limit switches.</li> <li>e. Check contact points. Replace if excessively burned or pitted. Check for burned out solenoid coil. See that necessary jumper wires are properly installed.</li> <li>f. Check transformer coil for signs of overheating. Replace if burned out.</li> <li>g. Replace motor. On single-phase motors the centrifugal switch or capacitor may be defective.</li> </ul> |
| 6-2. Hook Moves in Wrong Direction. | <ul style="list-style-type: none"> <li>a. Reverse phasing on three-phase hoists.</li> <li>b. Hoist wired wrong.</li> </ul>                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>a. Interchange any two of three power supply line leads. Do not change green ground lead. Refer to Section II, par. 2-4.</li> <li>b. Check wiring connections with appropriate wiring diagram.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6-3. Hook Will Raise But Not Lower. | <ul style="list-style-type: none"> <li>a. "DOWN" electrical circuit open.</li> <li>b. Contactor not functioning.</li> <li>c. Push button inoperative.</li> <li>d. Load brake locked up and overload clutch slipping.</li> </ul>                                                                                                             | <ul style="list-style-type: none"> <li>a. Check for loose connections. See that necessary jumper wires are properly installed on contactor. Check limit switch condition and electrical connections.</li> <li>b. Check for burned or pitted contact points, also burned out solenoid coil.</li> <li>c. Check push button contacts and wires.</li> <li>d. Consult Authorized <b>BUDGIT</b> Hoist Repair Station.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                |



## SECTION VI - TROUBLE SHOOTING (Continued)

| Trouble                              | Probable Cause                                                                                                                                                                                                                                                                                                                                                    | Remedy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6-4. Hook Will Lower But Not Raise.  | <ul style="list-style-type: none"> <li>a. Excessive Load, causing overload clutch to slip.</li> <li>b. Overload clutch out of adjustment.</li> <li>c. "UP" electrical circuit open.</li> <li>d. Contactor not functioning.</li> <li>e. Push button inoperative.</li> </ul>                                                                                        | <ul style="list-style-type: none"> <li>a. Reduce loading to rated capacity of hoist, as shown on nameplate.</li> <li>b. Test hoist and replace clutch if hoist will not lift rated capacity.</li> <li>c. Check for loose connections. See that necessary jumper wires are properly installed on contactor. Check limit switch condition and electrical connections.</li> <li>d. Check for burned or pitted contact points or burned out solenoid coil.</li> <li>e. Check push button contacts and wires.</li> </ul>                                  |
| 6-5. Hoist Will Not Lift Rated Load. | <ul style="list-style-type: none"> <li>a. Low voltage.</li> <li>b. Overload clutch out of adjustment.</li> <li>c. Motor brake not releasing.</li> </ul>                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>a. See that power supply is same voltage listed on motor data plate. Check size of power supply lines. Refer to fig. 2-1.</li> <li>b. Remove and replace clutch assembly. Refer to Section IV, par. 7-2 and 7-4.</li> <li>c. Remove motor and check brake components. Refer to Section VII, par. 7-2, d, e and f.</li> </ul>                                                                                                                                                                                  |
| 6-6. Excessive Drift When Stopping.  | <ul style="list-style-type: none"> <li>a. Excessive load.</li> <li>b. Motor brake not holding.</li> <li>c. Load brake not holding.</li> </ul>                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>a. Reduce loading to rated capacity load, shown on nameplate.</li> <li>b. Remove motor and clean and inspect brake linings. Refer to Section V, par. 5-4.</li> <li>c. Remove load brake and inspect parts. Refer to Section V, par. 5-4.</li> </ul>                                                                                                                                                                                                                                                           |
| 6-7. Hoist Motor Overheats.          | <ul style="list-style-type: none"> <li>a. Excessive load.</li> <li>b. Excessive duty-cycle.</li> <li>c. Excessive "jogging".</li> <li>d. Wrong voltage.</li> <li>e. Centrifugal switch on single-phase motors not opening starting winding.</li> <li>f. Defective motor or worn needle bearings in hoist frame.</li> <li>g. Motor brake not releasing.</li> </ul> | <ul style="list-style-type: none"> <li>a. Reduce loading to rated capacity of hoist, shown on nameplate.</li> <li>b. Reduce frequency of lifts.</li> <li>c. Reduce frequency of jogs.</li> <li>d. Check voltage rating on motor data plate against power supply.</li> <li>e. Refer to Section VII, par. 7-9, b (5) (b). Remove motor and inspect switch.</li> <li>f. Disassemble hoist and inspect for defective, worn or damaged parts.</li> <li>g. Remove motor and check brake components. Refer to Section VII, par. 7-2, d, e and f.</li> </ul> |

## SECTION VII - DISASSEMBLY AND RE-ASSEMBLY

### 7-1. GENERAL

a. The following disassembly and reassembly instructions apply to all models in the line of **BUDGIT** Electric Hoists with 4 digit catalog numbers and equipped with **MAN-GUARD** overload clutch. Where needed, variations to instructions are provided to cover differences between models (suspensions, load chain, capacity sizes and motor voltage ratings), with applicable models specifically noted.

b. A complete teardown procedure is given, however, if only certain parts require repair or replacement, a partial teardown may be performed using the applicable portions of the instructions.

c. For easier handling during disassembly, the following disassembly steps may, where conditions permit, be completed before hoist is removed from its overhead suspension or disconnected from its power supply: Remove chain container, if hoist is so equipped; remove lower block and



load chain assembly, following procedure outlined in paragraph 7-2, a. Drain and discard gear case oil, by removing plug at bottom of frame.

d. These hoists contain precision machined parts and should be handled with care at disassembly and at re-assembly. When removing or installing parts with press fits, be careful to apply pressure evenly. On ball bearings, apply pressure to face of inner or outer race, whichever is adjacent to mating part. This will avoid damage to bearing races from brinelling by pressing thru bearing balls. Apply a thin film of sealant to parts having a press fit when they are installed.

## 7-2. DISASSEMBLY OF HOIST INTO SUBASSEMBLIES

### a. Removal of Lower Block and Load Chain Subassembly.

(1) On models with single-reeved load chains (1/4 thru 1 ton capacities) disconnect tail end of load chain from anchor at side of frame. Remove spring clip and connecting link attaching chain to anchor on roller chain models (fig. 7-1). Remove fillister head screw holding end link to frame on coil chain models. Remove grooved pin from the limit actuator and pull it off end of chain. With hoist connected to power supply, run chain out of hoist by operating in "lowering" direction. (See note following paragraph (2) below and note in Sec. V, par. 5-2, a, (3) for inserting short length of chain.)

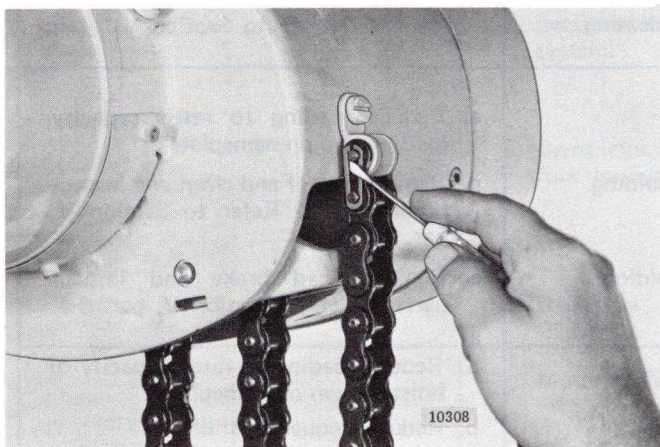


Figure 7-1. Removing Spring Clip from Connecting Link at Tail End of Load Chain (Roller Chain Models)

(2) On models with double-reeved load chains (2 ton capacities) disconnect tail end of load chain from anchor at side of hoist frame and remove limit actuator as in (1) above, run chain out of hoist by operating it in "lowering" direction, and disconnect opposite end of load chain from anchor inside hoist frame. To disconnect this end of chain, remove cotter pin from end of anchor pin, press pin from anchor and withdraw chain. On roller chain models the anchor in hoist frame must be rotated about 90° to permit removal of anchor pin. The drive pin securing threaded end of anchor in upper block assembly (at top of frame) must be removed in order to rotate the anchor.

**NOTE:** If hoist is inoperative it will be necessary to wait until after load brake is removed (par. c., below), then the chain can be pulled thru the hoist by hand.

(3) On triple-reeved 3 ton coil chain hoists, remove retaining ring and connecting link pin as shown in figures 7-33 and 7-34. Remove connecting link with chain from

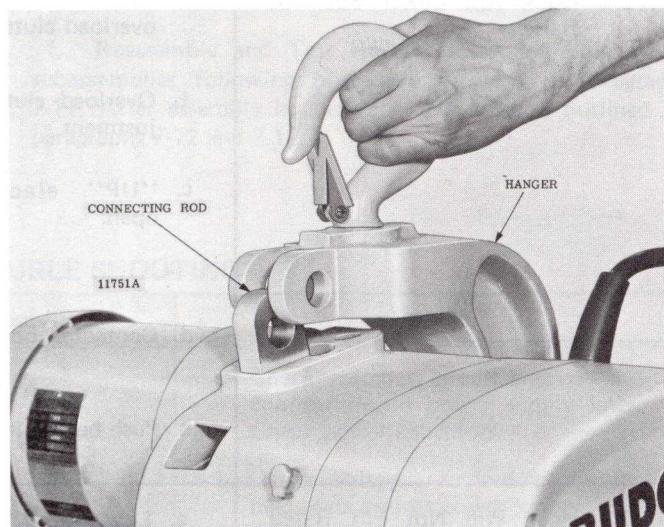


Figure 7-2. 3 Ton Hanger Bracket Connection Pin Removed

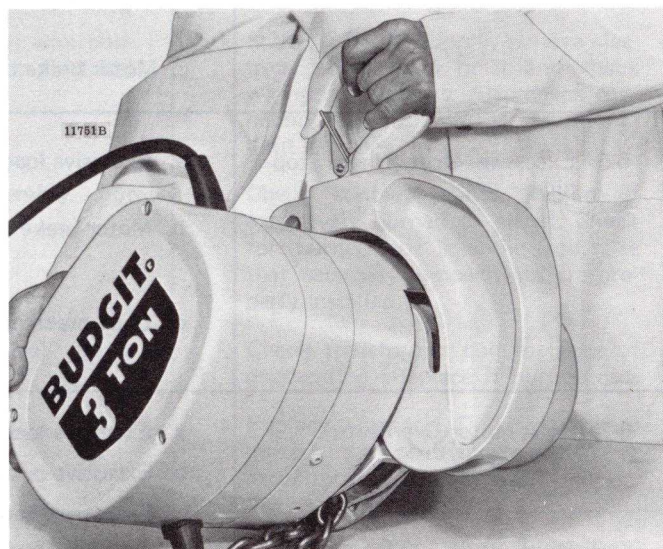


Figure 7-3. Removing 3 Ton Hanger Bracket from Hoist Frame

lower block. To remove connecting link from chain, take out cotter key and push anchor pin from connecting link. Chain can now be pulled thru hanger bracket and lower block. Unfasten tail chain from hoist frame, remove limit actuator, and if power is available, operate hoist in lowering direction to remove chain. (See note in Sec. V, par. 5-2, a, (3) for inserting short length of chain). If hoist is inoperative see note below but be sure to install short length of chain into hoist before removing load chain.

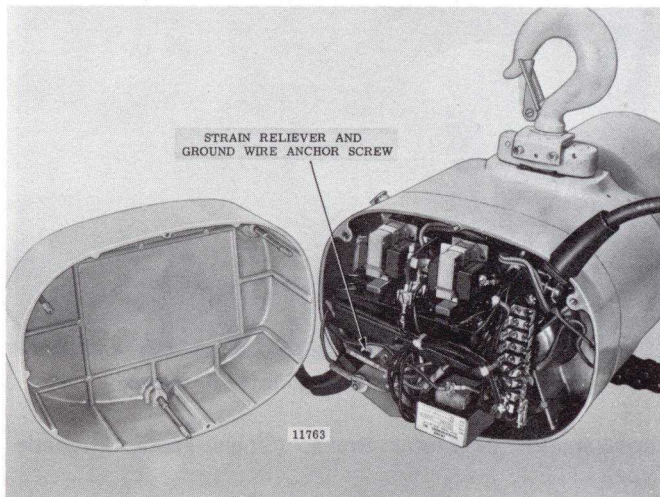
**NOTE:** If hoist is inoperative it will be necessary to remove load brake (par. c, below) so chain can be pulled thru the hoist by hand.

(4) To remove 3 ton hanger bracket from hoist, remove retaining ring and connecting rod pin (see figure 7-2). Rotate hoist approximately 45° (see figure 7-3) and hanger will slip free from hoist frame.



**b. Removal of Electrical Compartment Cover, Electrical Controls and Gear Case Subassembly.**

(1) Disconnect hoist from power source. Remove three cover retaining screws and lift off cover (figure 7-4). Cover screws have retaining rings which hold them in cover. Use caution as some covers contain counterweights.

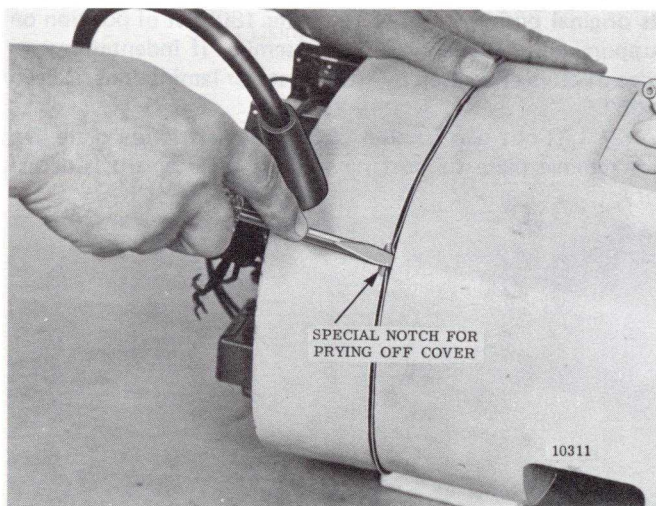


**Figure 7-4. View of Push Button Model Hoist with Electrical Compartment Cover Removed**

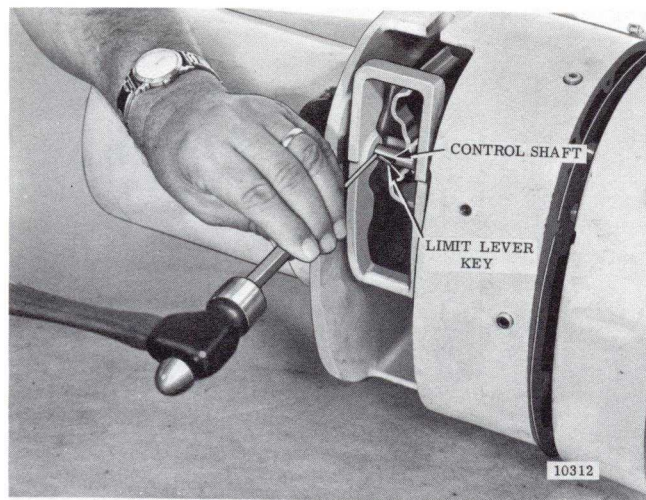
(2) Disconnect three push button conductor cable leads at plug-in type connectors that can be pulled apart. Remove screw and washer securing strain reliever (fig. 7-4) and pull the cable and grommet from its slot in gear case cover.

(3) Disconnect power supply flexible cable leads from terminals of contactor. Remove screw attaching ground leads to gear case cover and pull flexible cable and grommet from slot in cover.

(4) Disconnect motor leads from electrical control units. Number of leads depends on type of motor. (See wiring diagrams in Section VIII).



**Figure 7-5. Prying Gear Case Cover From Hoist Frame**

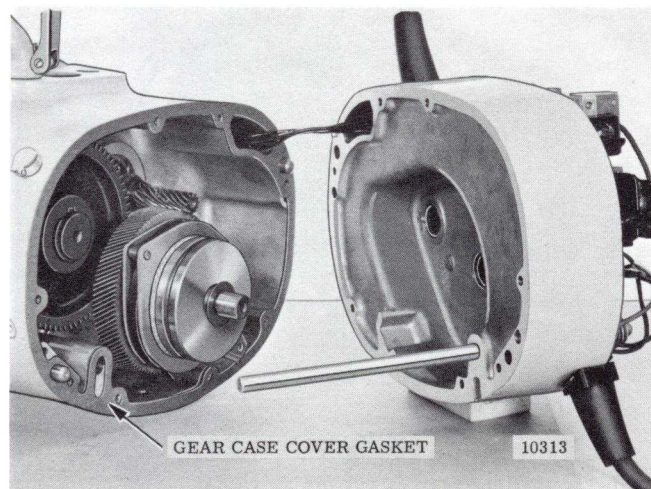


**Figure 7-6. Removing Limit Lever Key From Control Shaft**

(5) Remove eight hex socket head screws and lockwashers securing gear case cover to hoist frame. Pry gear case cover partially off hoist frame using screw driver at special notches provided at opposite corners of cover (fig. 7-5) to provide access for removing limit lever key from control shaft. Tilt Woodruff key in shaft slot using drift punch (fig. 7-6) and pull out using pliers. Gear case cover with electrical controls attached can now be lifted from frame (figures 7-7). Limit lever will drop free of frame as shaft is removed with cover. Discard gear case cover gasket.

**c. Removal of Load Brake and Clutch Assembly and Intermediate Gear Subassembly.**

(1) On 1/4 thru 1/2 ton capacity hoists, pull load brake and overload clutch assembly and the brake shaft washers from inside hoist frame (fig. 7-8). Caution: Grease-retained bearing has 36 rollers (all capacities) and may be reinstalled unless rollers are broken or missing or cup is damaged.



**Figure 7-7. Gear Case Cover With Electrical Controls Removed From Frame**



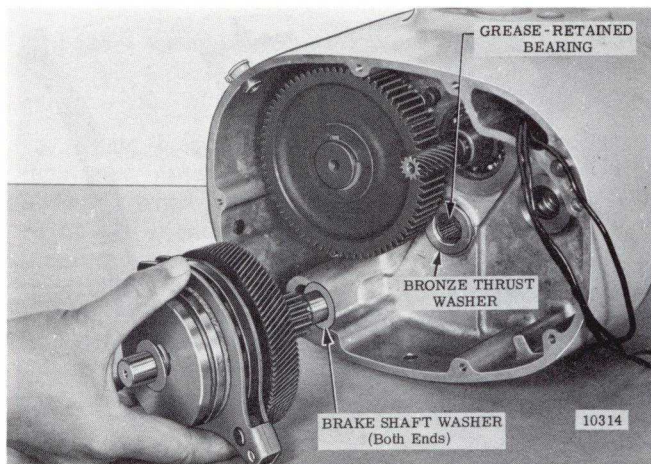


Figure 7-8. Removing Load Brake and Clutch Assembly (1/4 & 1/2 Ton Capacity Hoists)

(2) On 1, 2 and 3 ton capacity hoists, pull load brake and clutch assembly and intermediate gear assembly, including the thrust washers for each unit, from hoist frame (fig. 7-9).

**d. Removal of Motor Assembly.**

(1) Place hoist frame on wood blocks to protect integral gear on motor shaft. Loosen four motor mounting bolts and lift motor assembly from frame (fig. 7-10). Guide motor leads through wire passage to avoid damage. Remove friction disc spring from splined brake hub on motor shaft.

(2) On single phase model hoists, motor brake parts are attached to motor shaft and will come off with motor. On three phase models, the brake parts are assembled to frame.

NOTE: Single phase motor brakes have 2 friction discs and 2 friction plates. The 2 discs and only one plate are assembled on motor; the remaining plate is loosely assembled over support pins inside hoist frame.

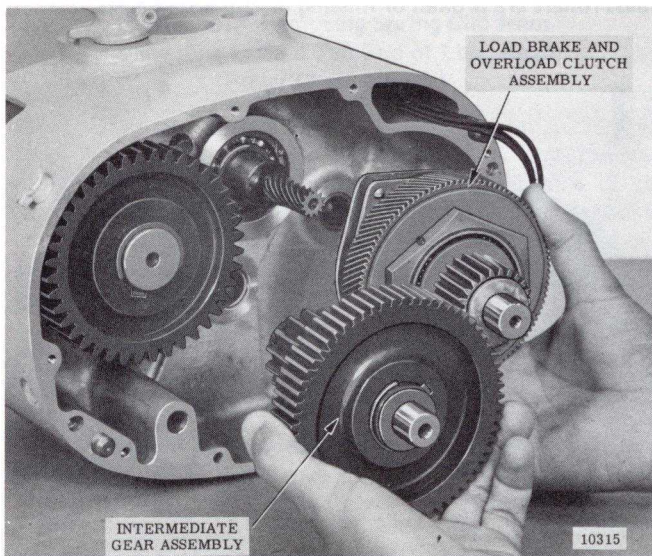


Figure 7-9. Removing Load Brake and Clutch and Intermediate Gear Subassemblies (1, 2 and 3 ton capacity hoists)



Figure 7-10. Removing Motor Assembly

**e. Removal of Motor Brake. (Single Phase, Magnetic Type).**

(1) The type brake used on single phase push button model hoists is attached to motor shaft and is removed with motor (par. d., above).

(2) Brake friction plates, friction discs and friction disc spring can be lifted from motor after removing retaining ring and washer from motor shaft.

(3) The brake plunger and plunger spring are held in place by the splined hub which is keyed and pressed onto motor shaft. These parts should not be removed unless replacement is necessary. Refer to par. 7-9 for rebuild instructions.

**f. Removal of Motor Brake. (Three Phase, Magnetic Type)**

(1) Remove two self-locking nuts (fig. 7-11) securing brake spring cage to brake plate support pins and lift out assembled spring cage plunger, spring and compression plate (fig. 7-12). This assembly should not be further disassembled and is to be replaced only as an assembly.

IMPORTANT: Before removing plunger assembly, mark its position on support pins in frame so it can be reinstalled in its original position. DO NOT rotate 180° out of position on support pins. Replace plunger assembly if indentations on edge of plunger, caused by striking stator laminations, exceed .005".

(2) Lift out two friction discs and one friction plate. Do not remove plate support pins unless replacement is necessary.

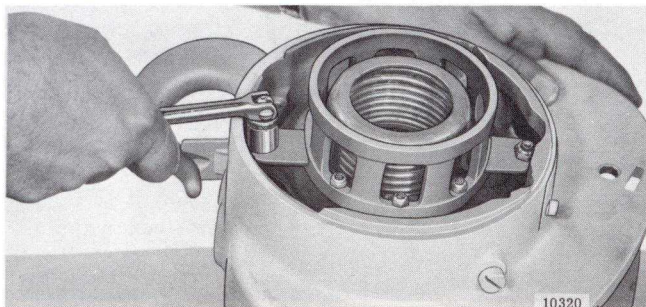


Figure 7-11. Removing Self-locking Nuts Securing Spring Plunger to Brake Plate Pins



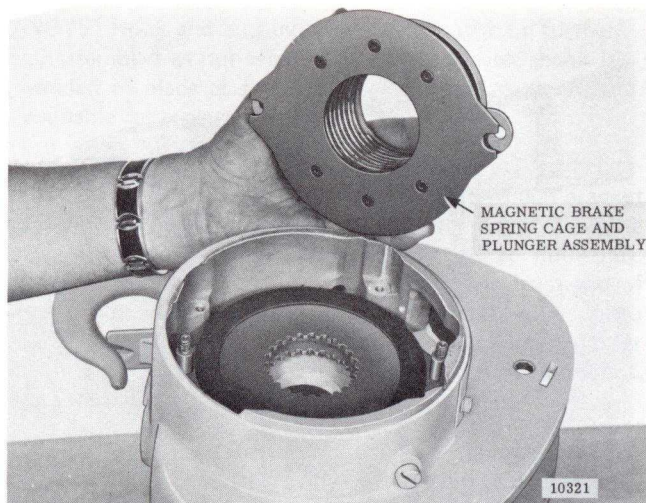


Figure 7-12. Removing Magnetic Brake Spring Cage and Plunger Assembly

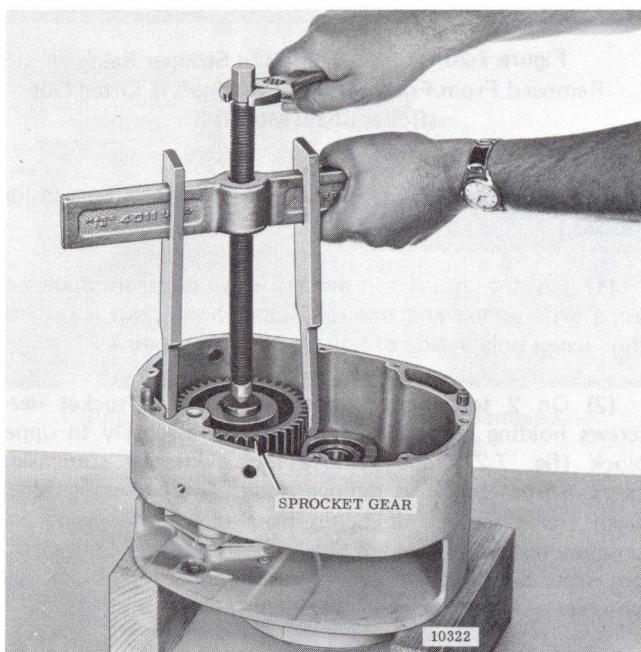


Figure 7-13. Pulling Sprocket Gear from Sprocket Shaft Using Common Puller

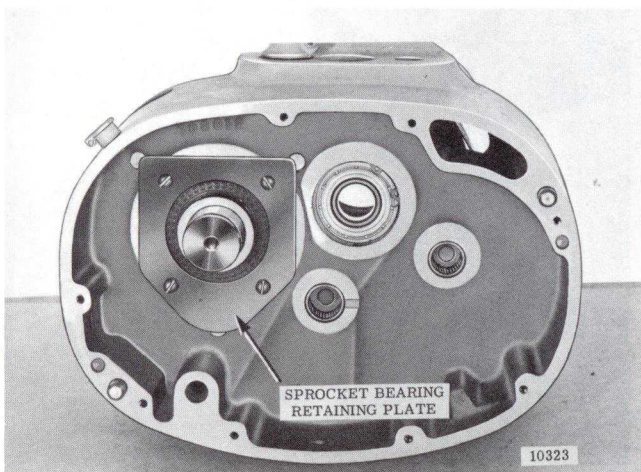


Figure 7-14. View of Sprocket Bearing Retaining Plate

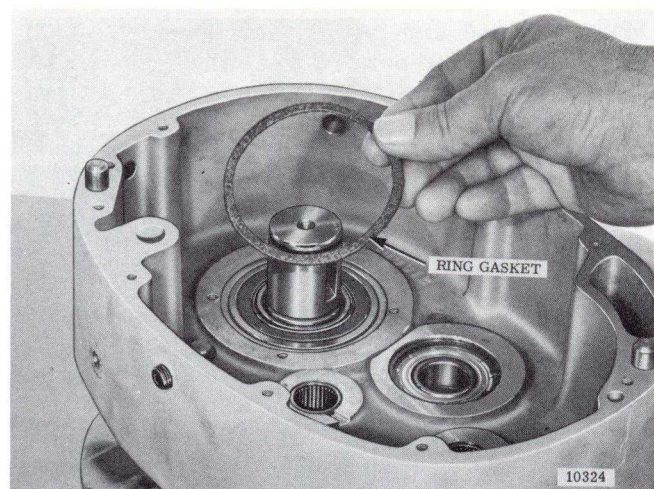


Figure 7-15. Removing Sprocket Bearing Ring Gasket

### 7-3. REBUILD OF HOIST FRAME, SPROCKET GEAR, SPROCKET SHAFT AND CHAIN GUIDE.

#### a. Disassembly of Sprocket Gear, Shaft and Chain Guide.

(1) Remove retaining ring from end of sprocket shaft and pull off sprocket gear using a common puller (fig. 7-13). Remove Woodruff key from shaft.

(2) Unscrew four fillister head machine screws securing sprocket bearing retaining plate and remove plate (fig. 7-14). Remove and discard ring gasket from groove around bearing (fig. 7-15).

(3) Using suitable pry bar (fig. 7-16) partially raise three chain guide support pins from their bores in frame. Pull them the rest of the way out using pliers with jaws protected to avoid damaging pins. Remove and discard two "O" ring gaskets from grooves on each support pin.

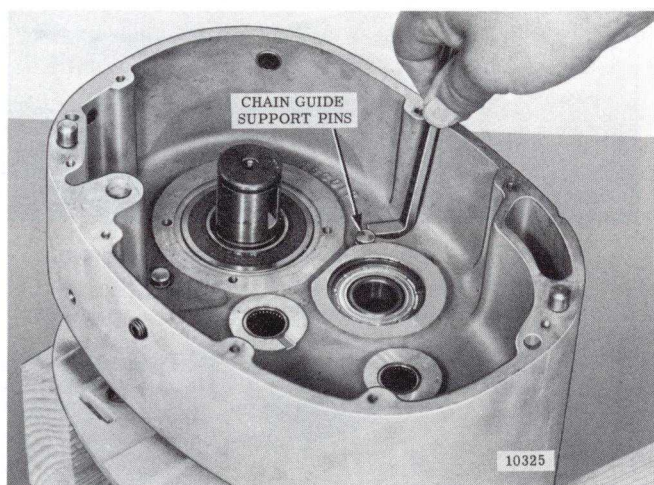


Figure 7-16. Removing Chain Guide Support Pins Using Pry Bar.

(4) Remove sprocket shaft and front ball bearing assembly from frame by lifting up on end of shaft while prying up on sprocket as illustrated in figure 7-17. The chain guide will need to be repositioned in frame as sprocket shaft is raised to allow the sprocket to pass thru hole of guide (fig. 7-18). On roller chain model hoists, the chain stripper must be partly removed from guide by prying it out using screw driver or other suitable tool. See figures 7-19 and 7-20.



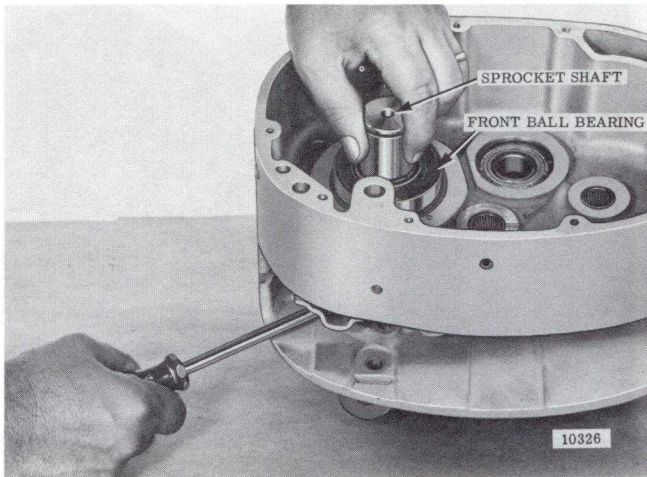


Figure 7-17. Removing Sprocket Shaft and Front Bearing

**NOTE:** Do not remove oil seal, ball bearings, and needle bearings from their bores in the frame unless they show evidence of wear or damage and require replacement. When replacing rear sprocket ball bearing pack bearing 1/2 full with NLGI No. 2 grease.

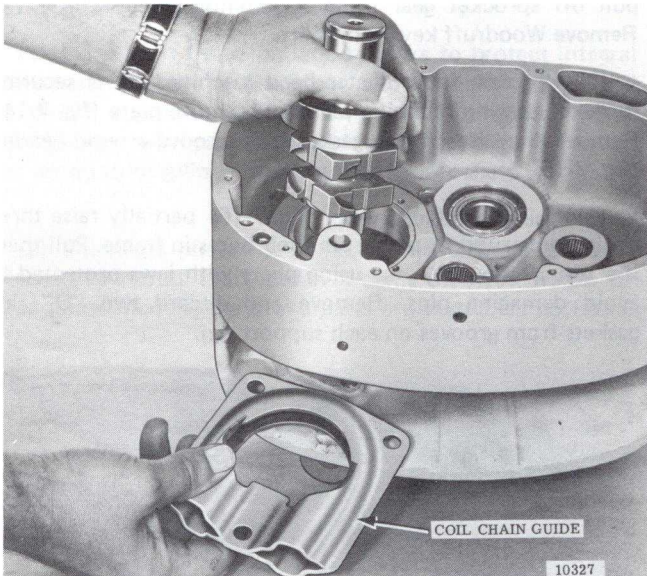


Figure 7-18. Chain Guide Being Removed From Frame as Sprocket Shaft is Lifted Out (Coil Chain Models)

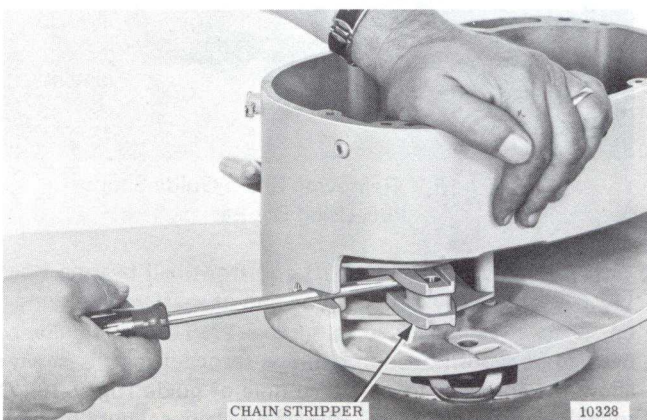


Figure 7-19. Chain Stripper Being Partly Removed From Chain Guide (Roller Chain Model)

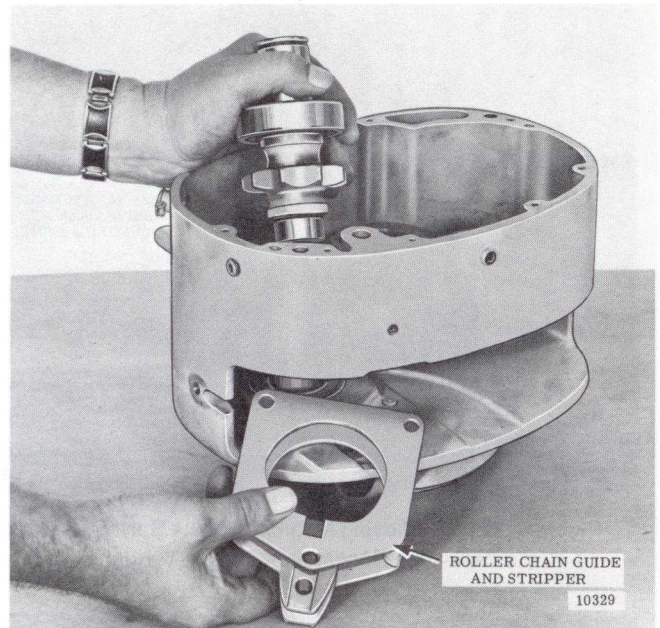


Figure 7-20. Chain Guide and Stripper Being Removed From Frame as Sprocket Shaft is Lifted Out (Roller Chain Model)

**b. Disassembly of Upper Hook. (Hook Suspension Models.)**

(1) On 1/4 thru 1 ton models, drive pin from hook nut using drift punch and unscrew upper hook. Nut is reached thru access hole in side of hoist frame. See figure 7-21.

(2) On 2 ton models, unscrew two hex socket head screws holding suspension bushing lock assembly to upper block (fig. 7-22) and remove lock. Unscrew suspension bushing from block to remove hook. To disassemble block from frame remove drive pin from nut inside frame and unscrew nut from stud holding body to frame. Remove drive pin securing threaded end of chain anchor in block and unscrew anchor. Block can then be lifted off.

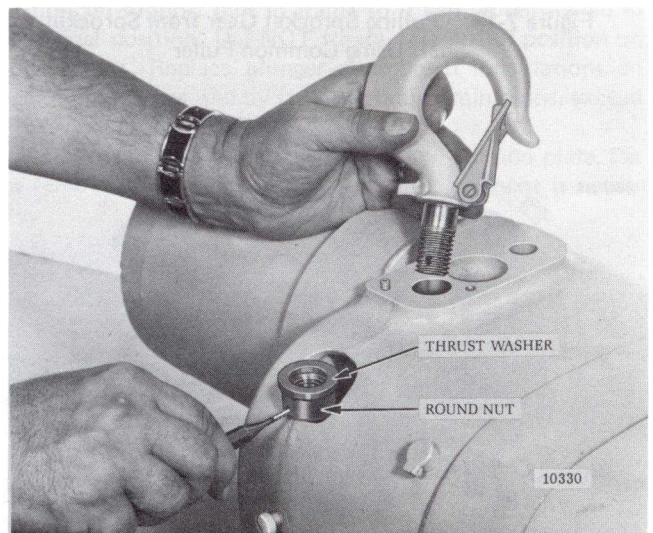


Figure 7-21. Removing Upper Hook and Hook Nut From Hoist Frame (1/4 thru 1 ton models)



NOTE: Hook and bushing assembly is not to be further disassembled as nut securing bushing to hook shank is welded in place at the factory. Only the assembly is available for replacement.

(3) On 3 ton models, remove retaining ring from connecting rod pin and push connecting rod pin through bracket and connecting rod, releasing hanger (see figure 7-2): Raise hanger above hoist frame to provide access to hook nut. Rotate hook until grooved pin in nut is visible from end of hanger frame. Using a drift punch, drive grooved pin thru hook nut until it hits hanger pocket. Remove drift far enough to hold nut from turning and unscrew hook from nut. Thrust washer will fall free.

(4) To remove connecting rod (figure 7-2) on 3 ton hoist drive pin from rod nut using drift punch and unscrew connecting rod. Nut is reached thru access hole in side of hoist frame. (See figure 7-21).

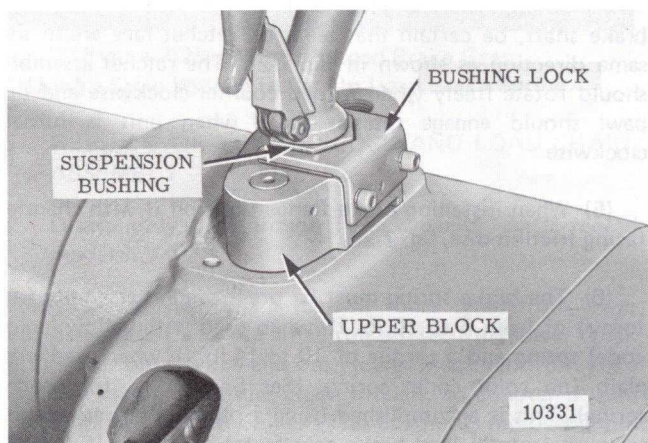


Figure 7-22. View of Upper Hook Assembled To Hoist Frame (2 Ton Models)

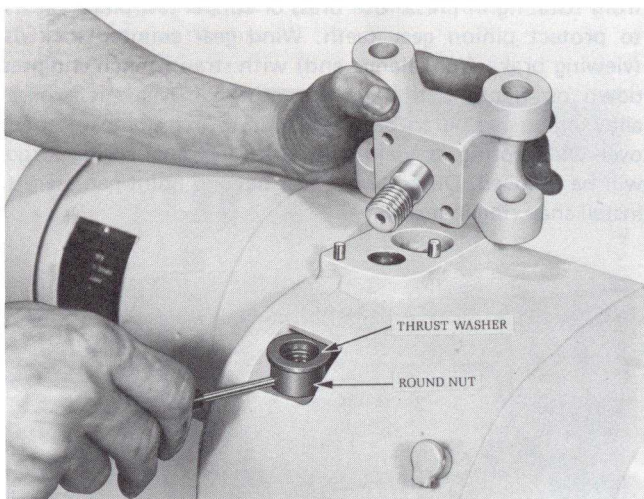


Figure 7-23. Removing Suspension Lug (1/4 Thru 1 Ton Model)

#### c. Disassembly of Suspension Lug (Lug Suspension Models).

(1) On 1/4 thru 1 ton models drive grooved pin from the round nut inside the hoist frame. Hold round nut from rotating with drift punch thru access hole in side of hoist frame. Unscrew suspension stud assembly by wrenching hex on top of suspension lug (see figure 7-23).

(2) On 2 ton models, remove three hex socket head screws securing the two lock plates to block at top of frame and pull out locks. Remove suspension lug, using an extra thin 1-1/4" open end wrench to unscrew suspension bushing from block. Instructions for removing block from frame are given in paragraph b., (2).

NOTE: The suspension lug is not to be further disassembled, as nut securing suspension bolt and bushing to lug is permanently secured in place at the factory. Only the suspension lug assembly is available for replacement.

(3) On 3 ton models lug bolt is removed in same manner as hook. See paragraph 7-3, b, (3).

#### d. Reassembly.

(1) Before assembly, all parts should be thoroughly cleaned and inspected to determine their serviceability. Replace parts that are excessively worn or damaged.

(2) Reassemble suspension hook or lug, chain guide, sprocket shaft and sprocket gear to frame following a reverse procedure of the disassembly steps listed in paragraphs (a.) thru (c.), above. If ball bearing is to be reinstalled on sprocket be certain to position it so that the seal side of bearing faces out, away from sprocket. To help prevent oil seepage, apply sealant on O.D. of sprocket bearing and in seat for the ring gasket.

### 7-4. REBUILD OF LOAD BRAKE AND OVERLOAD CLUTCH ASSEMBLY.

#### a. Disassembly.

(1) Place load brake and clutch assembly, flange up, in a vise equipped with brass or copper jaw plates to protect pinion gear teeth. Remove snap ring from end of load brake shaft (fig. 7-24).

(2) Using a puller tool, remove brake flange from shaft. A groove is provided around outer diameter for this purpose. See figure 7-25. Remove key from shaft and lift off 2 friction discs, and the pawl and ratchet assembly (fig. 7-26).

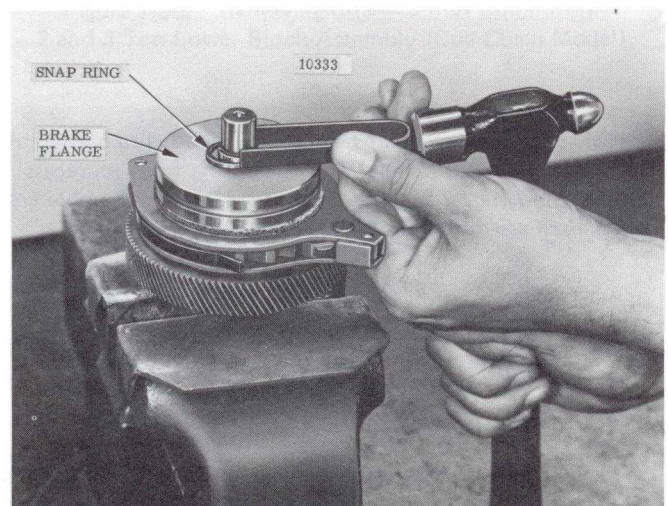


Figure 7-24. Removing Snap Ring from Load Brake Shaft



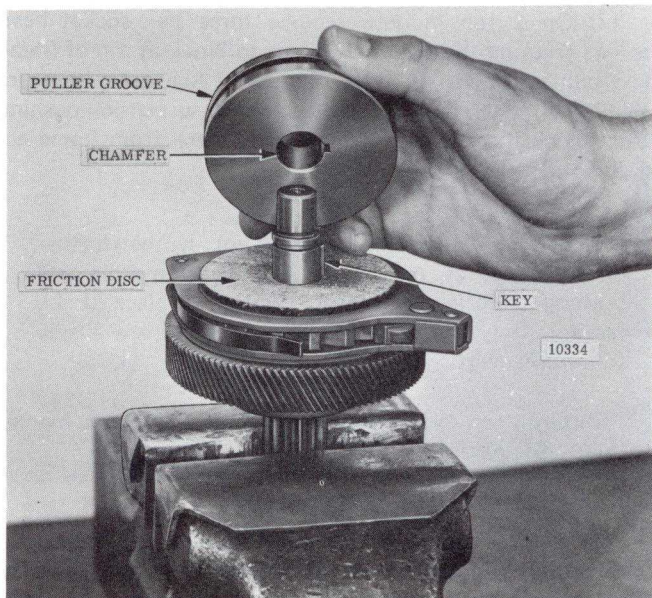


Figure 7-25. View Showing Load Brake Flange Removed

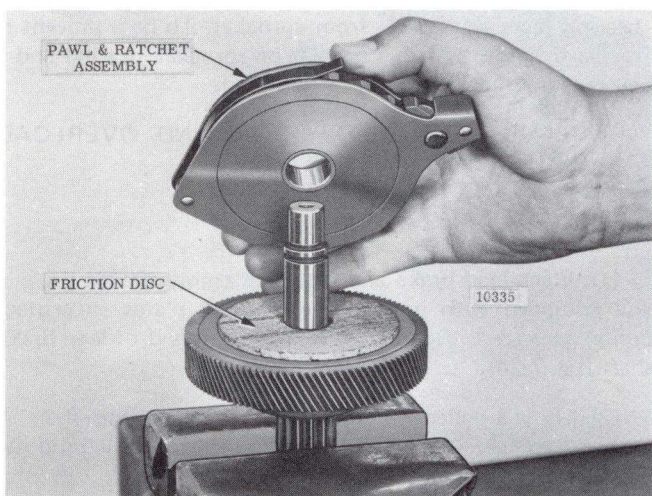


Figure 7-26. Removing Pawl and Ratchet Assembly From Load Brake Shaft

(3) Remove load brake gear and overload clutch assembly from output pinion shaft. Pull the spring from its recess in clutch cone (fig. 7-27) but do not further disassemble gear and clutch assembly. see "NOTE" below.

**NOTE:** Disassembly of the load brake gear and overload clutch assembly (fig. 7-27) is not recommended. Clutch pressure is preset by the factory at assembly to provide the correct torque to allow the clutch to refuse loads within a specified range (110% of rated load to 180% rated load). It is suggested whenever there is a need to repair or readjust the gear and clutch assembly that it be sent to an authorized **BUDGIT** Hoist Repair Station where adequate tools, fixtures and appropriate test equipment is available.

(4) The load brake pawl and ratchet is a riveted assembly and is not to be disassembled.

#### b. Reassembly.

(1) Before assembly, all parts should be cleaned and inspected to determine their serviceability. Replace parts that are excessively worn or damaged.

(2) Reassemble load brake parts following a reverse procedure of the disassembly steps listed above, observing the assembly steps (3) thru (6) below.

(3) Before installing spring in its recess in center of clutch cone (fig. 7-27) apply a good grade of ball bearing grease to inside of recess. Spring must be positioned exactly as illustrated, butted against pin.

(4) When installing pawl and ratchet assembly on load brake shaft, be certain that teeth on ratchet face are in the same direction as shown in fig. 7-26. The ratchet assembly should rotate freely when turned counter-clockwise and the pawl should engage ratchet teeth when unit is turned clockwise.

(5) When installing brake flange position it with chamfer facing friction disc, fig. 7-25.

(6) The brake spring must be pre-loaded at assembly to a torque of from 6 to 10 lb. ft. when used with yellow (color code) spring and a torque of 10 to 14 lb. ft. when used with plain (no color code) spring. (See Section IX for proper spring). This is accomplished using a plumber's strap wrench to wind (rotate) load brake gear to set up spring (fig. 7-28) while pressing brake flange into place using an arbor press. Clamp pinion end of shaft into a portable vise to keep brake from rotating in press. Use brass or copper jaw plates on vise to protect pinion gear teeth. Wind gear counter-clockwise (viewing brake from flange end) with strap wrench and press down on flange until snap ring groove in shaft is exposed allowing snap ring to be installed. Use extreme care not to over wind spring as yield will result and final spring torque will be reduced. Do not wind gear beyond point necessary to install snap ring in groove.

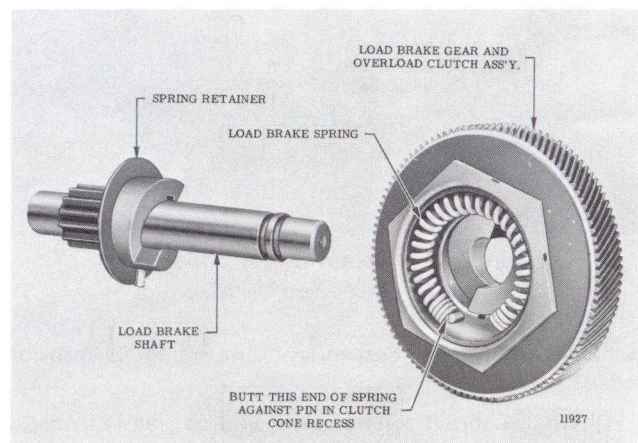


Figure 7-27. Load Brake Gear and Overload Clutch Assembly Removed from Load Brake Shaft Showing Brake Spring Installed in Clutch Cone



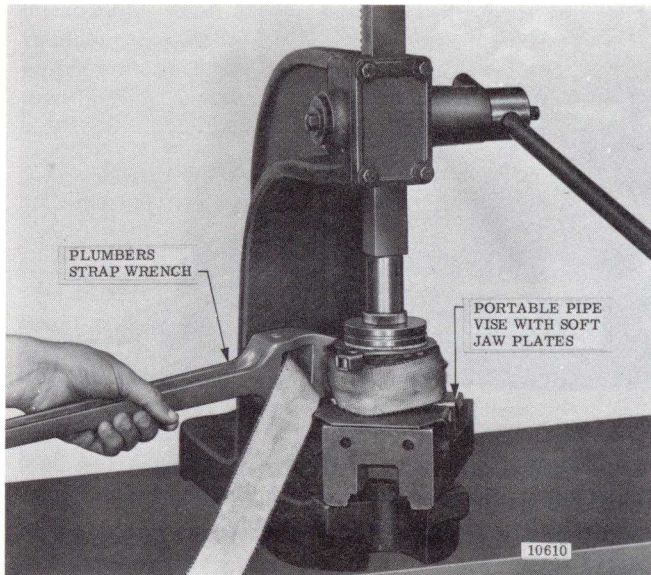


Figure 7-28. Winding Load Brake Gear  
Using a Strap Wrench to Set Up Load Brake Spring.

#### 7.5. REBUILD OF LOWER BLOCK AND LOAD CHAIN ASSEMBLY.

##### a. Disassembly (1/4 through 1-ton capacity, single reeved models).

(1) Separate load chain (coil or roller type) from lower block assembly. Drive out small roll pin securing lower block pin in lower block yoke and push lower block pin from yoke to release chain. On roller chain models, an adapter is used to attach chain to lower block. This adapter is removed from end of chain by first driving out small roll pin and then pushing out adapter pin.

(2) Drive grooved pin from limit actuator and pull actuator from end of chain.



Figure 7-29. Removing Roll Pin Securing Hook Nut  
to Hook Shank

(3) Lower blocks are of a pinned construction, permitting replacement of body, thrust bearing, or hook and nut assembly. To disassemble, drive spring pin from hook nut (Fig. 7-29). With pin removed, hold hook nut from turning with drift punch and rotate hook to unscrew it from nut. Separate hook, bearing shield, needle bearing and two thrust washers from body. Hook and nut are drilled at assembly and are replaced only as an assembly.

##### b. Disassembly (2-ton capacity, double reeved models).

(1) On 2-ton capacity roller chain models, remove retaining ring from one end of sprocket pin and press pin from lower block body. Grasp chain and pull out sprocket and two spring washers from body. Do not remove needle bearing from sprocket or pressure lube fitting from sprocket pin unless replacement is necessary.

(2) On 2-ton capacity coil chain models, remove fillister head screw securing center guide in top of lower block body and lift out guide (Fig. 7-30) and sprocket pin lock (Fig. 7-31). Press sprocket pin from body and pull out chain, sprocket and washer (Fig. 7-32). Do not remove bushing type bearing from sprocket or pressure lube fitting from sprocket pin unless replacement is necessary.

(3) Do not attempt further disassembly of 2-ton lower block assemblies. The hook nuts are welded in place by the factory. Only complete lower block assemblies or body and hook assemblies are available for replacement.

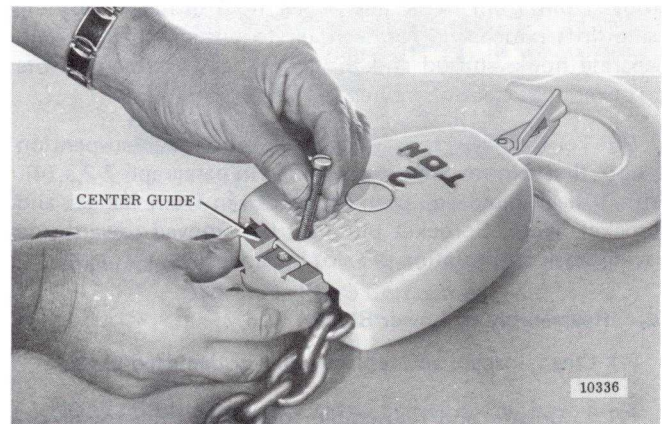


Figure 7-30. Removing Chain Center Guide from  
2 and 3 Ton Lower Block Assembly (Coil Chain Model)

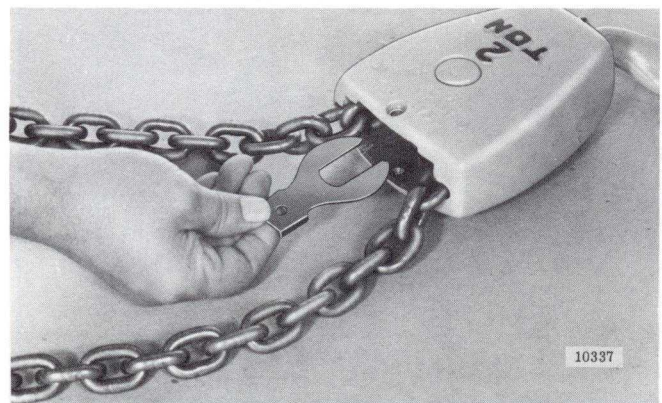


Figure 7-31. Removing Sprocket Pin Lock On  
2 and 3 Ton Lower Block Assembly (Coil Chain Model)





Figure 7-32. Removing Coil Chain and Sprocket on 2 and 3 Ton Lower Block Assembly (Coil Chain Model)

**c. Disassembly (3-ton capacity, triple reeved models).**

(1) Remove chain sprocket from lower block following procedure for 2-ton coil chain models described in paragraph 7-5, b, (2) above.

(2) To disconnect end of chain anchored to lower block, remove retaining ring from pin bore (Fig. 7-33). Push connecting link pin from bore by pressing through hole provided in opposite side of block (Fig. 7-34). Chain connecting link is now free and can be further disassembled for inspection.

(3) To remove hook from lower block body, first drive grooved pin from hook nut. Then hold nut from turning using drift punch and rotate hook to unscrew it from nut. Separate hook, shroud and thrust washer from body. Note that bearing surface of washer faces nut.

(4) To remove chain sprocket from upper suspension hanger, first remove hanger as outlined in paragraph 7-2,a,(4). With hanger removed, push sprocket pin from hanger and sprocket. Note: Sprocket pin must be removed toward side having small anti-rotation pin slot in hanger.

**d. Reassembly of Lower Blocks.**

(1) Clean, inspect and replace worn or damaged parts.

(2) Lubricate and reassemble following a reverse procedure of the disassembly steps above.



Figure 7-33. Removing Retaining Ring From Bore of Connecting Link Pin - 3 Ton Lower Block Assembly.

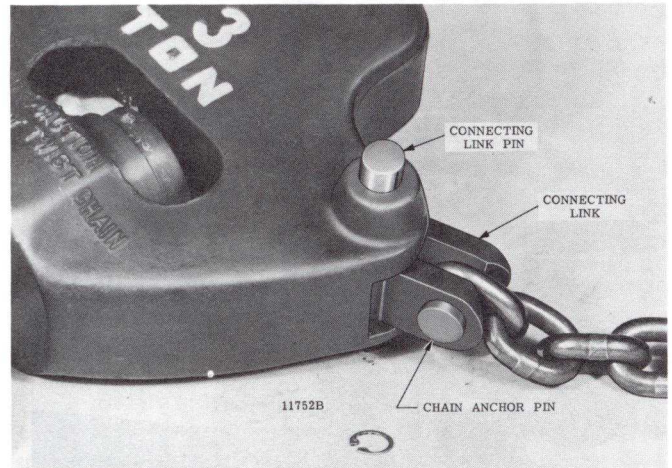


Figure 7-34. Removing Connecting Link Pin From 3 Ton Lower Block Assembly.

**7-6. REBUILD OF ELECTRICAL CONTROLS AND GEAR CASE COVER SUBASSEMBLY.**

**a. Disassembly.**

(1) Disconnect two limit switch leads from contactor. Also, if hoist has a transformer, disconnect transformer leads at the contactor or terminal board.

(2) Remove reconnectable terminal board if so equipped.

(3) Remove two screws and lift transformer from gear case cover if hoist is so equipped.

(4) Remove two screws and lockwashers attaching, contactor assembly to cover and lift off contactor. Refer to paragraph 7-8 for instructions for rebuild of contactor assembly.

(5) Remove two hex socket head screws and lockwashers securing limit switch assembly to gear case cover and pull limit switch assembly and control shaft from cover. Remove flanged sleeve bearing from shaft, or bore if it remains in cover.

(6) Loosen two nuts and screws holding limit switch to its retainer bracket and pull four spacers from between switch plates and bracket.

(7) Remove self-locking nut from end of control shaft and pull off washer, switch assembly, slide arm assembly, two spacer washers, drive spacer, insulation strip, centering lever, spring, spacer tube, retainer bracket and washer.

**NOTE:** Do not remove needle bearings from gear case cover unless they show evidence of wear or damage and require replacement.

**b. Reassembly.**

(1) Before assembly, all parts should be thoroughly cleaned and inspected to determine their serviceability. Replace parts that are worn or damaged.

(2) Reassemble parts to gear case cover in reverse of the



disassembly steps above. Ends of centering spring must straddle centering levers. Lubricate contact segments of limit switch with small amount of graphite grease. Be certain when installing limit switch that board with blue lead wire faces out.

## 7-7. REBUILD OF PUSH BUTTON STATION AND CONDUCTOR CABLE ASSEMBLY.

### a. Disassembly.

(1) Remove two fillister head screws from front of push button station and one screw from back. Lift off rear half of body.

(2) Loosen three terminal screws, detach conductor cable leads and remove cable assembly.

(3) Remove six round head machine screws and lift off three stationary contacts. Also lift out two interlock bars and their retainers.

(4) Remove both push buttons, springs, movable contacts and contact springs by unscrewing shoulder screws.

### b. Reassembly.

(1) Before assembly, all parts should be thoroughly cleaned and inspected to determine their serviceability. Replace all parts that are worn or damaged.

(2) Reassemble push button station and conductor cable following a reverse procedure of the disassembly steps listed above. When installing wave washer type springs, position them with concave side toward movable contacts. Cone shaped wire springs are installed with large diameter toward movable contact. Also be sure they fit over shoulder of screw. When installing rear body screw, be certain the loop in end of strain reliever is engaged by the screw.

**NOTE:** Do not attempt to shorten or lengthen push button conductor cable. Odd length conductor cable assemblies for other than standard 10 ft. lift hoists can be procured from the factory.

## 7-8. REBUILD OF CONTACTOR ASSEMBLY.

a. **General.** Complete disassembly of contactor assembly is generally not required, unless the contact boards are damaged and require replacement. In most cases, only the movable contacts, stationary contacts, center terminals, or solenoids need be removed and replaced, therefore, only a partial tear-down procedure is given.

### b. Disassembly.

(1) Remove four solenoid mounting screws (2 at each solenoid) and pull both solenoid coil and magnet assemblies, with jumper attached, from solenoid armatures.

(2) Depress one movable contact board, push out nylon pin connecting armature to movable contact board and remove solenoid armature. Repeat process to remove other armature.

(3) Remove shoulder screw and interlock bar from its support at bottom of contactor assembly and pull out both movable contact board assemblies.

(4) Unless inspection reveals excessively burned, pitted or corroded contact points, further disassembly is not required. Movable contacts are removed from contact boards by taking out their respective springs. Stationary contacts are removed by taking out their attaching screws.

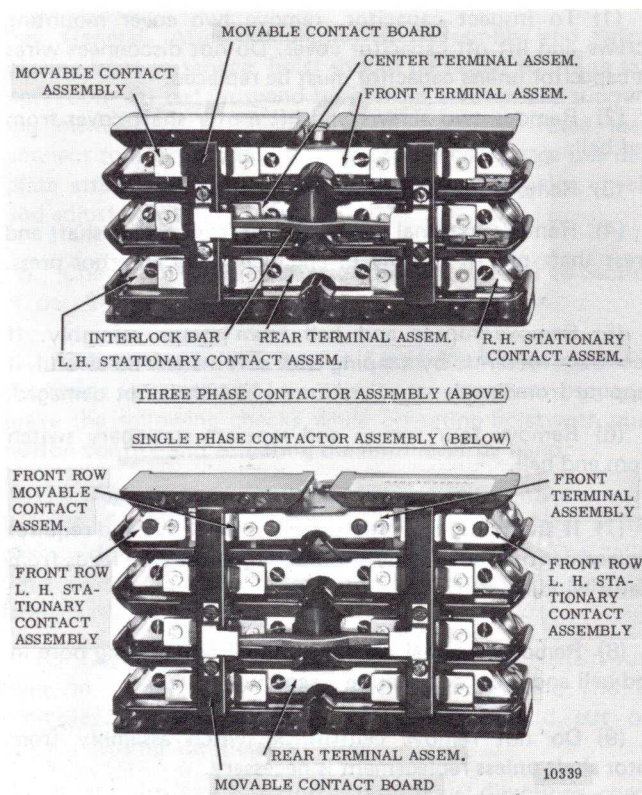


Figure 7-35. Bottom View Showing Single-Phase and Three-Phase Contactors.

**NOTE:** Contactors on single-phase hoists have four rows of contacts; while contactors on three-phase hoists have three rows of contacts (see figure 7-35). The front row of contacts on single-phase contactors are arranged in such a manner that the front row stationary contacts must first be removed to permit removing movable contact board assemblies.

### c. Reassembly.

(1) If contact points require replacement, install new movable contacts and stationary contacts using Replacement Contact Kit. (See Section IX, Replacement Parts).

(2) Reassemble contactor following a reverse procedure of the disassembly steps outlined above. On single-phase contactors, the front row of stationary contacts is assembled after movable contact board assemblies have been installed. Also, on single-phase contactors, be sure to install pushout springs under movable contact boards; at front position only.



(3) Reinstall jumper wires if they were removed in replacing contacts. Refer to applicable wiring diagrams in Section VIII. If jumper wires require replacement, use 16 ga. type TW solid wire.

## 7-9.. REBUILD OF SINGLE PHASE MOTOR ASSEMBLY.

### a. Disassembly.

(1) To inspect capacitor, remove two cover mounting screws and lift off capacitor cover. Do not disconnect wires at capacitor unless capacitor must be replaced.

(2) Remove two screws and lift motor shaft cover from end bell.

(3) Remove four motor mounting bolts.

(4) Remove external retaining ring from end of shaft and press shaft out of bearing in end bell using an arbor press.

(5) Remove motor end bell from stator assembly. If necessary loosen it by tapping with soft mallet. Be careful, if tapping from inside, that stationary switch is not damaged.

(6) Remove four screws and separate stationary switch from end bell.

(7) If stationary switch assembly is defective and requires replacement, remove it by unsoldering three wire leads from stator winding.

(8) Remove internal retaining ring from bearing bore in end bell and press out bearing assembly.

(9) Do not remove centrifugal switch assembly from rotor shaft unless replacement is necessary.

(10) Remove brake hub from motor shaft using a gear puller or by inserting two (2) steel bars through slots in plunger and pressing hub off with an arbor press. Protect gear end of shaft with soft metal when applying pressure.

### b. Reassembly.

(1) Before assembly, all parts should be cleaned and inspected to determine their serviceability. Replace all parts that are worn or damaged.

(2) Reassemble motor following a reverse procedure of the disassembly steps listed above.

(3) Plunger-to-shaft fit should be lubricated with a dry lubricant.

(4) If the centrifugal switch assembly was removed from the rotor shaft during disassembly, install a new switch. Be sure it is completely seated against shoulder on shaft.

(5) If wiring to stationary switch was disconnected, reconnect it in accordance with applicable wiring diagram in Section VIII.

(6) After reinstalling hoist motor, connect hoist to power supply and carefully complete both checks (a) and (b) below:

(a.) To check direction of rotation, briefly operate "UP" button. If hook lowers, interchange motor lead "T1" with "T4" at the contactor or controller. Hook must raise when the "UP" push button is operated.

(b.) To check the starting winding switch, connect ammeter (minimum 10 ampere) to motor lead "T5". Amperes must drop to zero in approximately one second when operating hoist in both "UP" and "DOWN" directions. If ampere reading does not drop to zero, interchange motor leads "T7" and "T8". If, after above checks were made with motor having been run in both directions, the ammeter reading still does not return to zero, the motor switch is not functioning properly and should be replaced.

## WARNING

Do not change control circuit wiring. Severe damage and malfunction of hoist may result.

## 7-10. REBUILD OF THREE PHASE MOTOR ASSEMBLY.

### a. Disassembly.

(1) If motor is equipped with a fan (2½ H.P. motors and Extra Heavy Duty Hoist motors), remove three self tapping screws securing fan shroud to end bell and lift off shroud. Then, remove external retaining ring from end of motor shaft and pull off fan.

(2) Pull four motor mounting bolts from motor and separate stator assembly from the end bell and rotor shaft assembly.

(3) On motors not equipped with fan, remove two screws and lift motor shaft cover from end bell.

(4) Remove external retaining ring from end of motor shaft and press shaft from bearing in end bell.

(5) Remove internal retaining ring from bearing bore in end bell and press out bearing assembly.

(6) Do not remove brake hub unless replacement is necessary. Hub teeth that show indentations from brake discs indicate hub should be replaced. To replace hub remove retaining ring and pull hub from shaft with a gear puller.

### b. Reassembly.

(1) Before assembly, all parts should be cleaned and inspected to determine their serviceability. Replace all parts that are worn or damaged.

(2) Reassemble motor following a reverse procedure of the disassembly steps listed above.

## 7-11. REASSEMBLY OF HOIST FROM SUBASSEMBLIES.

a. **General.** The procedure to be followed to reassemble the hoist from subassemblies is in reverse order of the disassembly steps outlined in paragraph 7-2. Listed below are special assembly precautions which should be observed to assure proper assembly.



NOTE: Grease retained bearings (see Section VII, par. 7-2, c, (1) and fig. 7-8) have loose rollers. When reassembling hoist, make certain the correct number of rollers are held in roller cup with grease before assembling load brake shaft to hoist.

b. **Assembly of Load Brake Thrust Washers.** When re-installing load brake assembly be certain thrust washers are properly installed at both ends of load brake shaft, as noted below.

(1) A bronze thrust washer with a lug on one side belongs on pinion end of shaft and must be installed so that its lug engages the special slot located on spotface surrounding bearing bore inside hoist frame or gearcase cover. Use heavy grease to hold washer in proper position in frame or cover (depending upon hoist capacity) during assembly.

(2) On hoists with Catalog Number prefix letters "A", "C", "D", "L" an 11/16" I.D. plain steel thrust washer must be used between end of pinion gear and the bronze thrust washer (fig. 7-8).

(3) A 5/8" I.D. steel thrust washer is to be installed on the brake flange end (end opposite pinion) of load brake assembly.

c. **Assembly of Load Chain.**

NOTE: Coil chain must be installed so welds on vertical links face away from the load sprocket.

(1) On coil chain and roller chain models install load chain over sprocket before load brake assembly is installed. Insert anchor end of chain (end opposite lower block on single reeved models) into chain guide opening on far side of hoist (viewing frame from anchor screw side). Rotate sprocket gear by hand counter-clockwise as chain is fed into opening. When sufficient chain has been run into hoist to reach anchor position, plus a slack loop, install limit actuator on anchor end of load chain (see (3) below) and attach end of chain to frame with special fillister head screw. Be certain chain is not twisted.

(2) On roller chain models, the chain may be installed after steps (d) and (e) below are accomplished, allowing chain to be run into hoist under power. Caution must be exercised so that fingers or hands are not caught in chain while it is being fed into hoist.

NOTE: The spring clip connecting link must be attached to anchor end of roller load chain before chain is run into hoist. Failure to do so may result in damage to chain or hoist.

(3) When installing limit actuator on anchor end of load chain attach it at link shown below using a grooved pin. See Figure 3-2.

| TYPE CHAIN | SIZE CHAIN      | NUMBER OF CHAIN LINKS FROM END LINK |
|------------|-----------------|-------------------------------------|
| Coil       | 1/4" Wire Dia.  | 8 Links                             |
| Coil       | 5/16" Wire Dia. | 8 Links                             |
| Roller     | 5/8" Pitch      | 8 Links                             |
| Roller     | 3/4" Pitch      | 7 Links                             |

d. **Wiring Hook-Up.** Before installing hoist, connect wiring to electrical controls in accordance with applicable wiring diagram in Section VIII. Wires are coded and/or numbered to agree with wiring diagrams.

e. **Lubricate Hoist.** Lubricate hoist as outlined in Section IV.

## 7-12. TESTING HOIST.

a. **General.** After completion of reassembly and before placing hoist in service, hoist should be tested to insure safe operation. To test: suspend hoist from an overhead supporting member of sufficient strength to carry rated load; connect to a power supply of the specified voltage (see data plate attached to motor); and perform the following checks and adjustments.

b. **Check For Correct Control Operation.** Refer to Section II, par. 2-4, (d), under "Warning".

c. **Check Upper and Lower Limit Stop Operation.** To determine if upper and lower limit stop functions properly, make the following checks while operating hoist with push button control and actuating the limit lever by hand:

(1) Depress "UP" push button and with chain running in raise direction, pull down on end of limit lever at tail chain side of hoist (left side facing cover end). The "UP" limit switch should cut off power, causing the hoist to stop.

(2) Depress "DOWN" push button and with chain running in lowering direction, push up on same end of limit lever. The "DOWN" limit switch should cut off power, causing the hoist to stop.

(3) If hoist does not stop in both travel directions, check for improper wiring. Refer to par. 6-2 and appropriate wiring diagram. If wiring is correct, check to see that limit switch is correctly installed, par. 7-6, (b).

(4) As a final check, operate hoist (no load) in the lowering direction and allow tail chain limit actuator to trip limit lever. Hook should stop. Repeat check in hoisting direction and allow lower block to trip limit lever. Hook should stop.

d. **Check Hoist With Capacity Load.** Attach rated capacity load to lower hook and check hoist operation. If hoist does not lift rated load, refer to par. 7-13.

(1) Operate hoist to raise load. When control is released, hoist should instantaneously stop and hold load at that level.

(2) Operate hoist to lower load a short distance, then release control. Hoist should stop instantaneously and hold load at that level.

(3) If hoist does not stop or hold load refer to Section VI.

## 7-13. TEST PROCEDURE FOR CHECKING OPERATION OF MANGUARD OVERLOAD CLUTCH

a. **General.** The overload clutch must be tested using known weights. The following prerequisites (par. (1) thru (4)) must be strictly observed in performing this test.



(1) A qualified person shall determine before testing, that all structures supporting the hoist are adequately strong to withstand the test load of 200 percent of rated hoist load, whether hoist is tested in installed position or moved to a designated test facility.

(2) Loads used for testing must be accurately known.

(3) Test shall be made only by a qualified operator thoroughly familiar with the hoist and the purpose of the test.

(4) Provide adequate and proper rigging to insure test loads are securely attached, properly balanced, and will lift level.

b. **Test Procedure.** With the above prerequisites satisfied and hoist properly connected to electrical power, proceed with the test as follows:

(1) Using a known load equal to rated load of hoist, operate hoist to lift load. Raise load high enough to be certain

the entire load is freely suspended. **Clutch should not slip at rated load.** If hoist does not lift rated load, clutch requires adjustment. Refer to Section V, par. 5-4, c.

(2) Increase load to 200 percent rated load and operate hoist to lift the load. **Clutch must slip**, causing the hoist to refuse to lift the load. If hoist lifts this overload, the overload clutch is out-of-adjustment and must be readjusted. Refer to Section V, par. 5-4, c.

(3) If clutch slips as required in step (2) above, continue to run hoist (clutch slipping — hoist refusing to lift load) for five (5) cycles of one (1) second each.

(4) Remove excess weight to return the load to rated hoist load. Lift rated load one final time to be certain that the clutch does not slip and that the hoist lifts the rated load.

**WARNING**

DO NOT LIFT MORE THAN RATED LOAD EXCEPT FOR TEST PURPOSES.

**NOTICE**

THIS EQUIPMENT MUST BE EFFECTIVELY GROUNDED ACCORDING TO THE NATIONAL ELECTRICAL CODE, ARTICLES 250-57, 250-59, OR 610-51 OR OTHER APPLICABLE CODES. IF THE GROUNDING METHOD USED IS THROUGH THE TROLLEY WHEELS, THEN EACH SECTION OF TRACK MUST BE GROUNDED BY METAL-TO-METAL CONNECTION TO THE BUILDING GROUND OR ELECTRICAL SYSTEM GROUND.

**NOTES**

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## SECTION VIII - WIRING DIAGRAMS

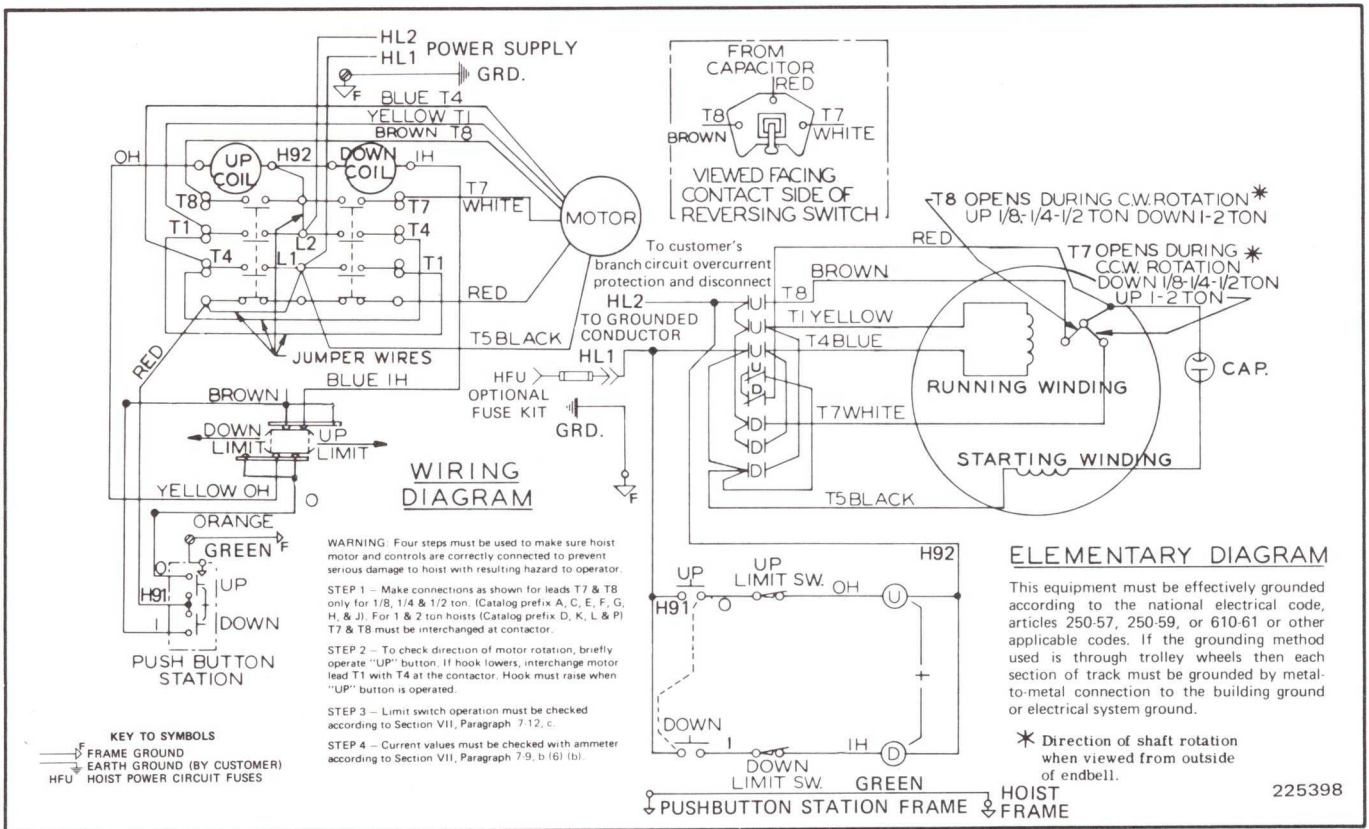


Figure 8-1. Electrical Diagrams for 115 Volt, 1-Phase, 60 Hertz, A.C. Hoists with Push Button Control.

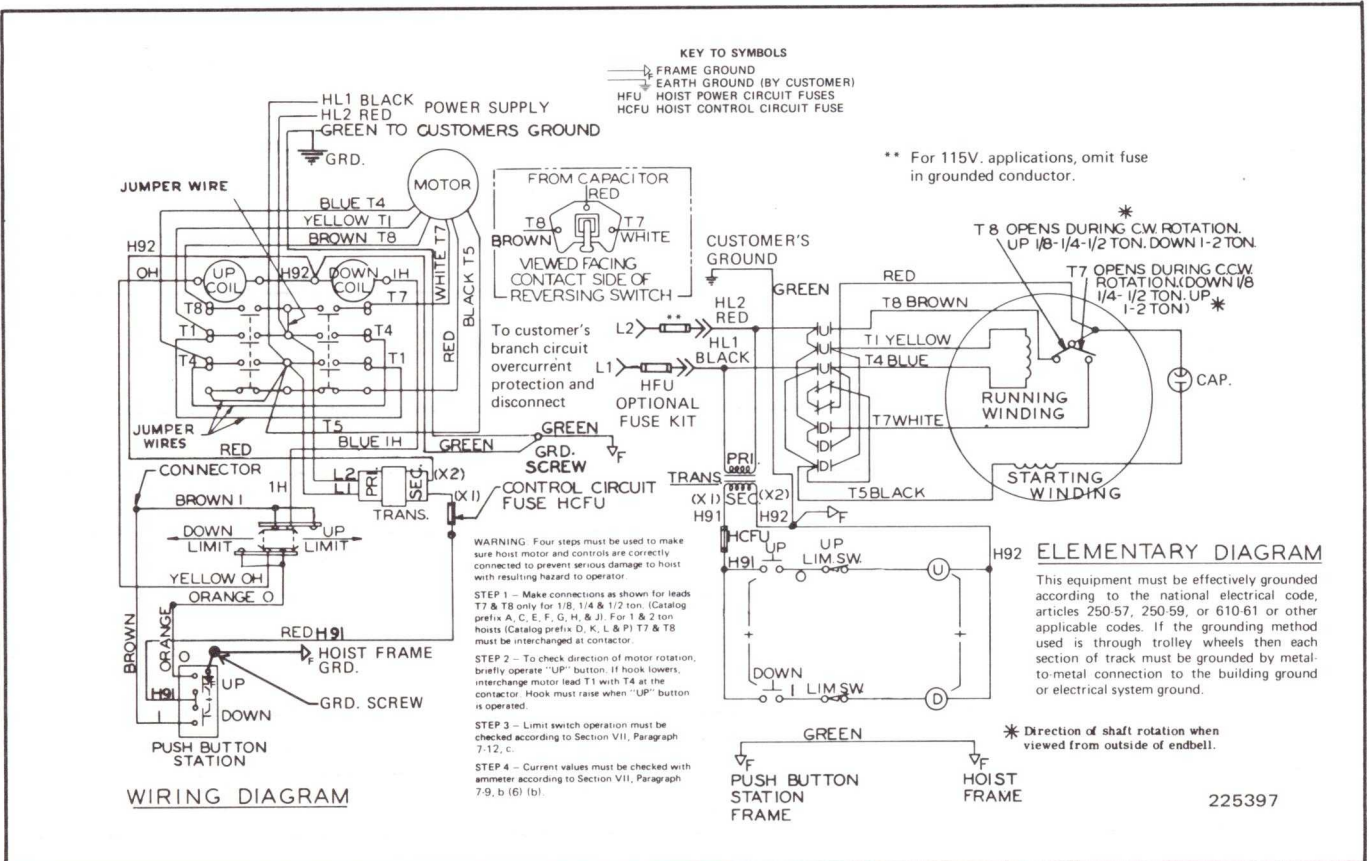


Figure 8-2. Electrical Diagrams for 230 Volt, 1-Phase, 60 Hertz, A.C. Hoists with Push Button Control (Also for 115 Volt, 1-Phase Hoists with Special 24 Volt Control)



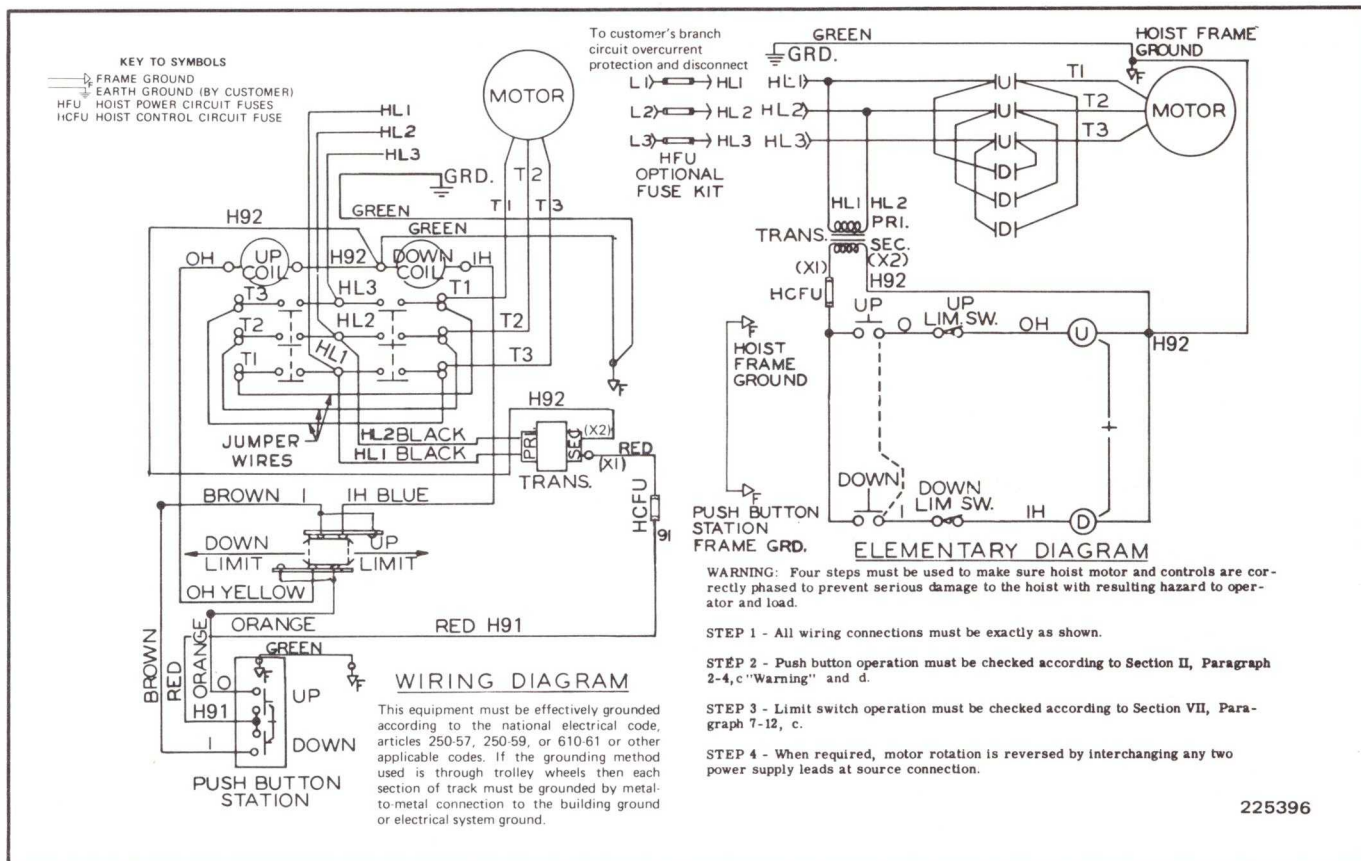


Figure 8-3. Electrical Diagrams for Single Voltage 208-230-460-575, 3 Phase, 60 Hertz, A.C. Hoists with Push Button Control.

NOTE: SEE FIGURE 8-4 ON FOLLOWING PAGE FOR WIRING DIAGRAM ON 230/460-3-60. RECONNECTABLE HOISTS.

## NOTES



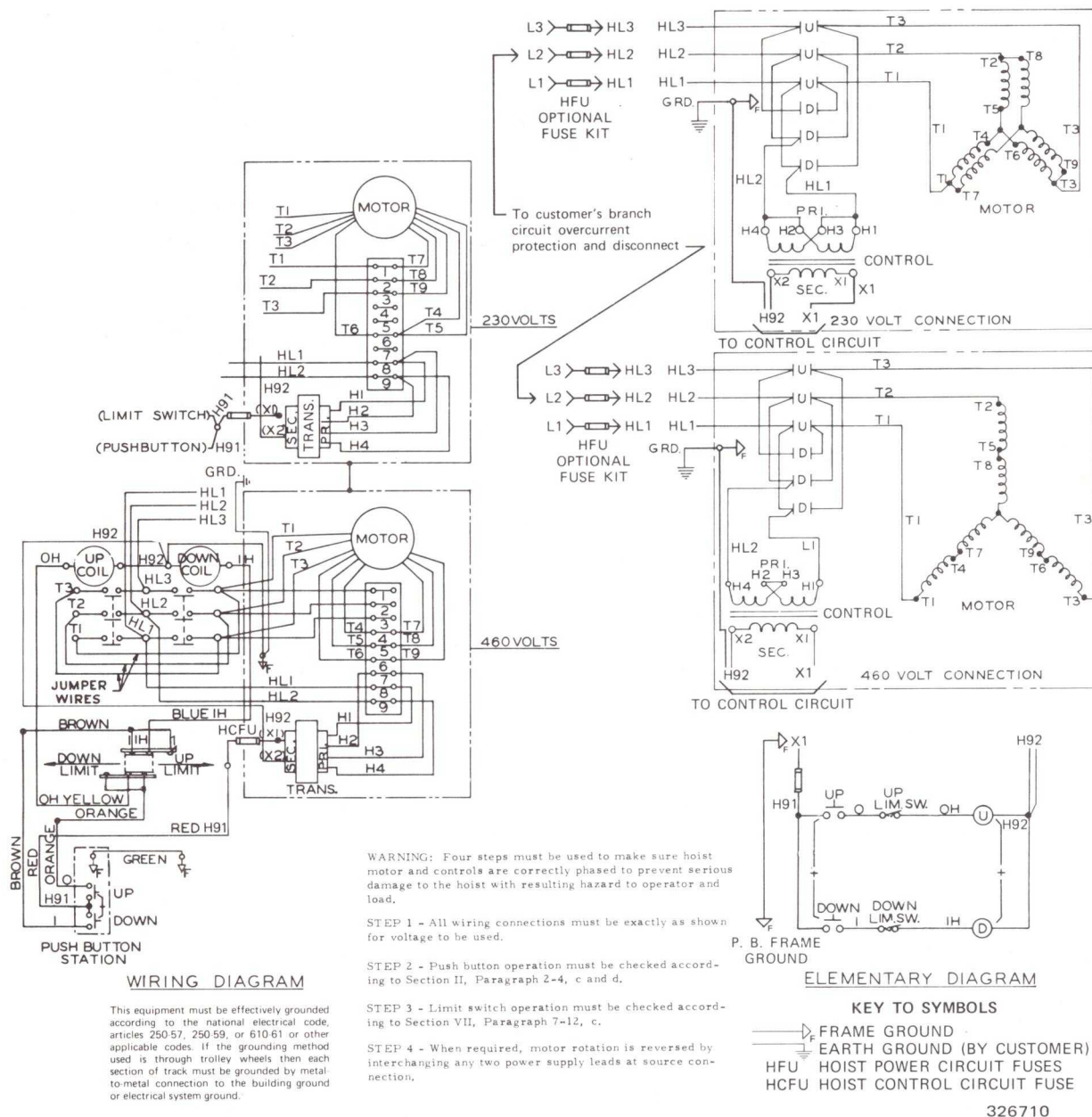


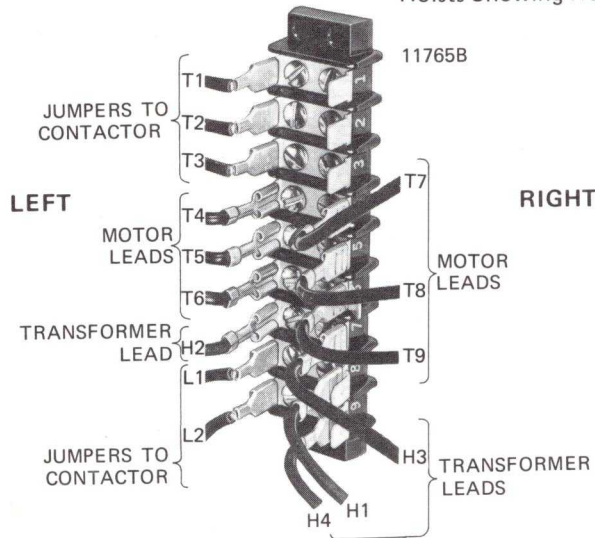
Figure 8-4. Electrical Diagrams for Reconnectable 230/460 Volt, 3 Phase, 60 Hertz A.C. Hoists with Push Button Control

#### NOTICE

**BUDGIT** Electric Hoist motors are designed as an integral part of the hoist and should not be serviced in any way beyond the instructions contained in this manual. Complete wound stator winding data and machining information is available to Authorized Repair Stations only.



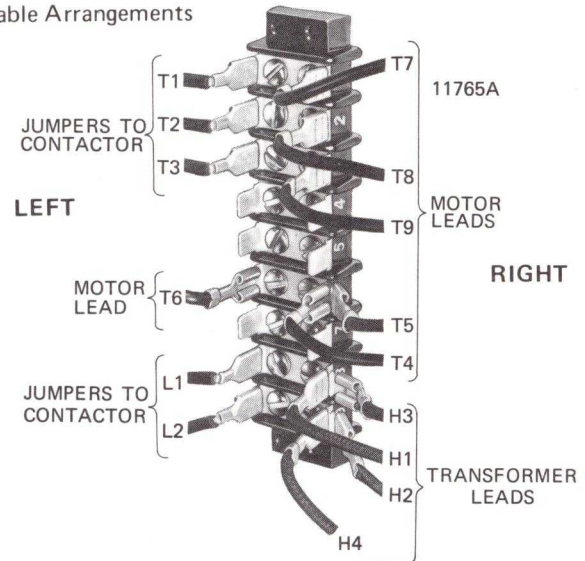
### Terminal Boards for Push Button Hoists Showing Reconnectable Arrangements



460V - 3PH - 60Hz Push Button

#### TO RECONNECT FROM 460 VOLTS TO 230 VOLTS:

Move Lead T7 From Terminal 4-Right To 1-Right  
Move Lead T8 From Terminal 5-Right To 2-Right  
Move Lead T9 From Terminal 6-Right To 3-Right  
Move Lead T4 From Terminal 4-Left To 6-Right  
Move Lead T5 From Terminal 5-Left To 6-Right  
Move Lead H2 From Terminal 7-Left To 9-Right  
Move Lead H3 From Terminal 7-Right To 8-Right



230V - 3PH - 60 Hz Push Button

#### TO RECONNECT FROM 230 VOLTS TO 460 VOLTS:

Move Lead H3 From Terminal 8-Right To 7-Right  
Move Lead H2 From Terminal 9-Right To 7-Left  
Move Lead T5 From Terminal 6-Right To 5-Left  
Move Lead T4 From Terminal 6-Right To 4-Left  
Move Lead T9 From Terminal 3-Right To 6-Right  
Move Lead T8 From Terminal 2-Right To 5-Right  
Move Lead T7 From Terminal 1-Right To 4-Right

Figure 8-5. Terminal Board Connections For Reconnectable Dual Voltage 3 Phase Hoists

## SECTION IX - REPLACEMENT PARTS

This section contains complete replacement parts information for your new **BUDGIT** Electric Hoist. The parts are grouped and illustrated in exploded view photos to permit easy identification. Each part in an illustration is keyed by reference number to a corresponding parts table. In the table will be found the BH part number, description and quantity required.

When ordering replacement parts it will be necessary that you include, with your order, the BH part number of parts required, plus, hoist catalog number and model number, which will be found on the hoist nameplate attached to motor.

Complete inspection, maintenance and overhaul service is available for **BUDGIT** Electric Hoists at any of the Authorized Repair Stations listed on the back cover. All are staffed by qualified factory-trained service men; have authorized testing equipment; and stock a complete inventory of genuine **BUDGIT** replacement parts.

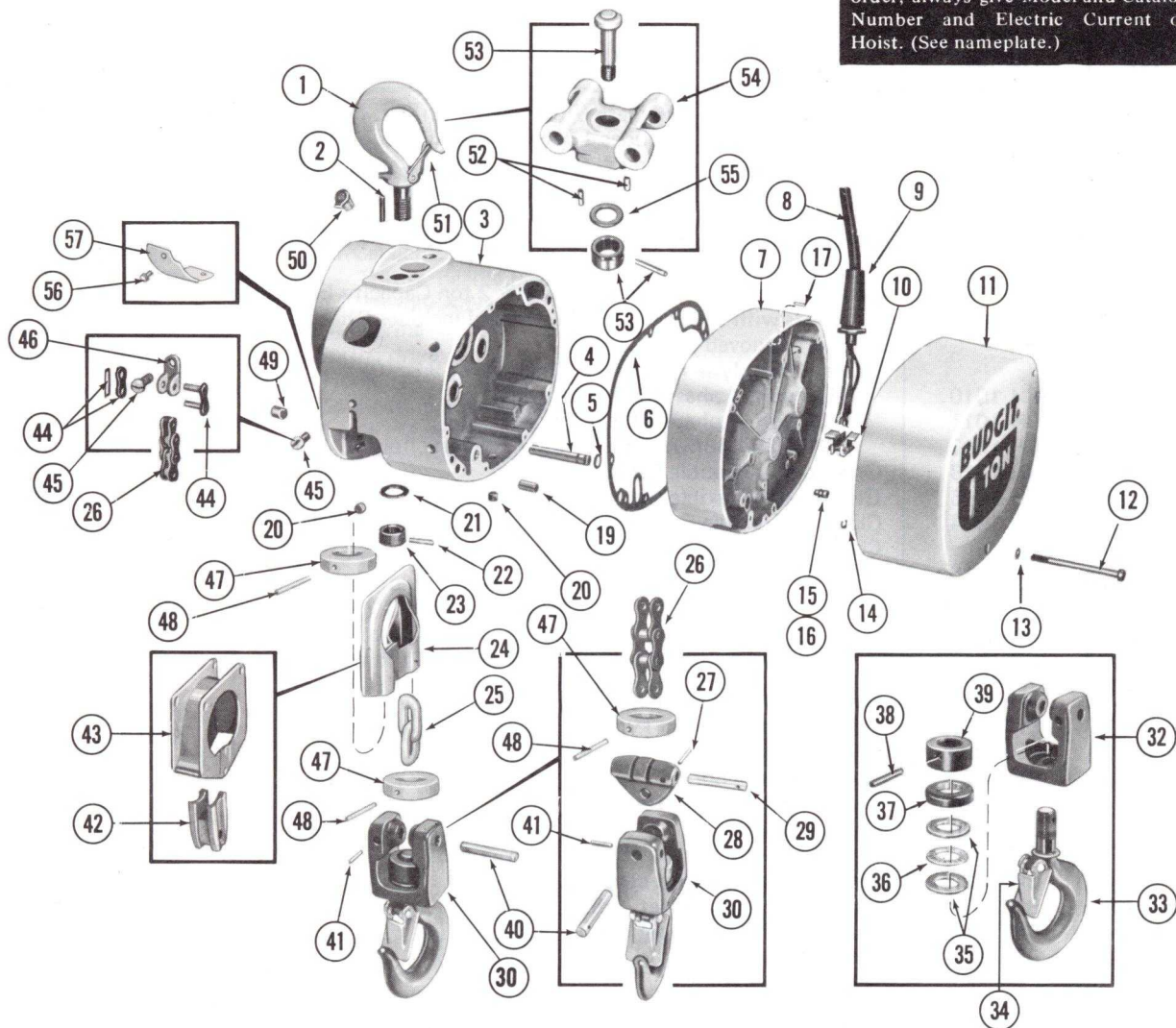
NOTICE: Information herein is subject to change without notice. Parts must be ordered from an Authorized **BUDGIT** Repair Station or from a **BUDGIT** Hoist Distributor.

### INDEX OF EXPLODED VIEW PARTS ILLUSTRATIONS

| Figure No. | Title                                                                                      | Page  |
|------------|--------------------------------------------------------------------------------------------|-------|
| 9-1        | Frame and External Parts . . . . .                                                         | 31-33 |
| 9-2        | Upper Suspension, Load Chain and Lower Block Parts (2 Ton Capacity Hoists) . . . . .       | 34    |
| 9-3        | Upper Suspension, Load Chain and Lower Block Parts (3 Ton Capacity Hoists) . . . . .       | 34    |
| 9-4        | Gearing and Load Brake Parts (¼ & ½ Ton Capacity Hoists) . . . . .                         | 35-36 |
| 9-5        | Gearing and Load Brake Parts (1, 2 & 3 Ton Capacity Hoists) . . . . .                      | 36-37 |
| 9-6        | Magnetic Motor Brake Parts (3 Phase, Standard Model and Extra Heavy Duty Hoists) . . . . . | 38    |
| 9-7        | Magnetic Motor Brake Parts (1 Phase, Standard Model Hoists) . . . . .                      | 39    |
| 9-8        | Electrical Control Units . . . . .                                                         | 40-41 |
| 9-9        | Limit Lever and Switch Parts . . . . .                                                     | 42    |
| 9-10       | Push Button Station and Conductor Cable Assembly (Standard Models) . . . . .               | 43    |
| 9-11       | Push Button Station and Conductor Cable Assembly (Extra Heavy Duty Models) . . . . .       | 43    |
| 9-12       | 2 and 3 Ton Lower Block Assembly (Coil Chain Models Hoists) . . . . .                      | 44    |
| 9-13       | 2 Ton Lower Block Assembly (Roller Chain Models Hoists) . . . . .                          | 45    |
| 9-14       | Single Phase Motor Assemblies . . . . .                                                    | 46    |
| 9-15       | Three Phase Motor Assemblies . . . . .                                                     | 47    |
| 9-16       | Replacement Motor Chart (Standard Model Hoists) . . . . .                                  | 48    |
| 9-17       | Replacement Motor Chart (Extra Heavy Duty Model Hoists) . . . . .                          | 48    |



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)



11897A

Figure 9-1. FRAME AND EXTERNAL PARTS  
Standard & Extra Heavy Duty Hoists  
(Except 2 & 3 Ton Model Upper Suspension, Load Chain & Lower Block)

| Ref. No. | Part Number | Description                                                                                                                                                                                   | Qty. Req'd. |
|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1        | BH-1001     | Hook Assembly – Upper with Latch (Includes Items 21, 22, 23 & 51)                                                                                                                             | 1*          |
| 2        | BH-1002     | Pin – Stop, upper hook                                                                                                                                                                        | 1           |
| 3        | BH-1003     | Frame Assembly (For Hoists with Cat. No. prefix letters A, C, G, H & J. Includes 2 bushings, 1 needle bearing, 1 cup, 1 oil seal, 1 oil filler, 2 pipe plugs, and 2 dowel pins.)              | 1           |
|          | BH-1004     | Frame Assembly (For Hoists with Cat. No. prefix letters D, K, L, P, M, S, & T. Includes 2 bushings, 2 needle bearings, 1 oil seal, 1 oil filler, 2 pipe plugs, and 2 dowel pins.)             | 1           |
|          | BH-1081     | Frame Assembly (For ¼ & ½ ton capacity Extra Heavy Duty with suffix -4, -5). Includes sealed frame, 2 bushings, 1 needle bearing, 2 oil seals, 1 oil filler, 2 pipe plugs, and 2 dowel pins.  | 1           |
|          | BH-1094     | Frame Assembly (For 1 & 2 ton Capacity Extra Heavy Duty with suffix -4, -5). Includes sealed frame, 2 bushings, 2 needle bearings, 2 oil seals, 1 oil filler, 2 pipe plugs, and 2 dowel pins. | 1           |
| 4        | BH-1005     | Pin – Support, chain guide                                                                                                                                                                    | 3           |
| 5        | BH-1006     | Gasket – "O" Ring                                                                                                                                                                             | 6           |
| 6        | BH-1007     | Gasket – Gearcase                                                                                                                                                                             | 1           |

(Continued on following page.)



Figure 9-1. FRAME AND EXTERNAL PARTS – Continued

| Ref. No. | Part Number | Description                                                                                                                                                     | Qty. Req'd. |
|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 7        | BH-1008     | Cover Assembly – Gearcase (For Hoists with Cat. No. prefix letters A, C, G, H & J. Includes 1 needle bearing, 1 cup and 2 grooved pins).                        | 1           |
|          | BH-1009     | Cover Assembly – Gearcase (For Hoists with Cat. No. prefix letters D, K, L, P, M, S & T. Includes 2 needle bearings and 2 grooved pins).                        | 1           |
|          | BH-1082     | Cover Assembly – Gearcase (For ¼ & ½ Ton Capacity Extra Heavy Duty Hoists with suffix (-4, -5). Sealed and includes 1 needle bearing, 1 cup and 2 grooved pins. | 1           |
|          | BH-1095     | Cover Assembly – Gearcase (For 1 & 2 ton Capacity Extra Heavy Duty Hoists with suffix (-4, -5). Sealed and includes 2 needle bearings and 2 grooved pins.       | 1           |
| 8        |             | Cable Assembly – Flexible, 5' (Incl. Items 9 & 10)                                                                                                              |             |
|          | BH-1010     | (115 volt, 1 phase, 60 hertz hoists)                                                                                                                            | 1           |
|          | BH-1011     | (230 volt, 1 phase, 60 hertz hoists)                                                                                                                            | 1           |
|          | BH-1012     | (208/230/460/575 volt, 3 phase, 60 hertz hoists)                                                                                                                | 1           |
| 9        | BH-1013     | Grommet – Flexible Cable – 3 phase                                                                                                                              | 1           |
|          | BH-1096     | Grommet – Flexible Cable – 1 phase                                                                                                                              | 1           |
| 10       | BH-1014     | Clamp – Flexible Cable                                                                                                                                          | 1           |
| 11       |             | Cover – Electrical Compartment                                                                                                                                  |             |
|          | BH-1016     | (1/4 ton)                                                                                                                                                       | 1           |
|          | BH-1017     | (1/2 ton)                                                                                                                                                       | 1           |
|          | BH-1018     | (1 ton)                                                                                                                                                         | 1           |
|          | BH-1019     | (2 ton)                                                                                                                                                         | 1           |
|          | BH-1085     | (3 ton)                                                                                                                                                         | 1           |
| 12       | BH-1020     | Screw – Fillister Head Machine                                                                                                                                  | 3           |
| 13       | BH-1021     | Lockwasher – Spring Type                                                                                                                                        | 3           |
| 14       | BH-1022     | Ring – Retaining                                                                                                                                                | 3           |
| 15       | BH-1023     | Lockwasher – Spring Type                                                                                                                                        | 8           |
| 16       | BH-1024     | Screw – Hex Socket Head                                                                                                                                         | 8           |
| 17       | BH-1025     | Pin – Grooved                                                                                                                                                   | 2           |
| 18       | BH-1026     | Grommet – (Motor Driven Trolley Models)                                                                                                                         | 1           |
| 19       | BH-1027     | Pin – Dowel, gearcase cover                                                                                                                                     | 2           |
| 20       | BH-1028     | Plug – Pipe, hex socket, 1/8"                                                                                                                                   | 2           |
| 21       | BH-1029     | Washer – Thrust, upper hook                                                                                                                                     | 1           |
| 22       | BH-1030     | Pin – Drive                                                                                                                                                     | 1           |
| 23       | **          | Nut – Upper Hook                                                                                                                                                | 1           |
| 24       |             | Guide Assembly – Coil Load Chain                                                                                                                                |             |
|          | BH-1031     | (1/4 & 1/2 ton Capacity Hoists)                                                                                                                                 | 1           |
|          | BH-1032     | (1, 2 & 3 ton Capacity Hoists)                                                                                                                                  | 1           |
| 25       | **          | Chain Assembly – Coil, load                                                                                                                                     |             |
|          | BH-1033     | (1/4" Dia. – 1/4 & 1/2 ton Capacity Hoists)                                                                                                                     | 1           |
|          | BH-1034     | (5/16" Dia. – 1 ton Capacity Hoists)                                                                                                                            | 1*          |
|          | BH-1080     | (1/4" Dia. – 1/4 & 1/2 ton Extra Heavy Duty Hoists – Cad. Plate)                                                                                                | 1           |
|          | BH-1086     | (5/16" Dia. – 1 ton Extra Heavy Duty Hoist – Cad. Plate)                                                                                                        | 1           |
| 26       | ***         | Chain Assembly – Roller, load                                                                                                                                   |             |
|          | BH-1039     | (5/8" Pitch - For 1/4, and 1/2 ton capacity hoists)                                                                                                             | 1           |
|          | BH-1040     | (3/4" Pitch – For 1 ton capacity hoists)                                                                                                                        | 1*          |
|          | BH-1075     | Repair Link – 5/8" Pitch Roller Chain (not shown)                                                                                                               | 1           |
|          | BH-1076     | Repair Link – 3/4" Pitch Roller Chain (not shown)                                                                                                               | 1           |
|          | BH-1171     | Pin – Spring Drive                                                                                                                                              | 1           |
| 28       |             | Adapter Kit – Roller Load Chain (Incl. Items 27, 28, 29, 40 and 41)                                                                                             |             |
|          | BH-1172     | (5/8" Pitch for 1/4 and 1/2 ton capacity hoists)                                                                                                                | 1           |
|          | BH-1173     | (3/4" Pitch for 1 ton capacity hoists)                                                                                                                          | 1*          |
| 29       | BH-1043     | Pin – Adapter, roller load chain (5/8" Pitch)                                                                                                                   | 1           |
|          | BH-1044     | Pin – Adapter, roller load chain (3/4" Pitch)                                                                                                                   | 1*          |
| 30       |             | Block Assembly – Lower, coil and roller chain (Incl. items 32 thru 39)                                                                                          |             |
|          | BH-1035     | (For 1/4 ton capacity hoists)                                                                                                                                   | 1           |
|          | BH-1035A    | (For 1/2 ton capacity hoists)                                                                                                                                   | 1           |
|          | BH-1036     | (For 1 ton capacity hoists)                                                                                                                                     | 1*          |
|          |             | Note: Lower block assemblies do not include attaching pins or roller chain adaptor. Order separately.                                                           |             |
| 31       |             | (RESERVED)                                                                                                                                                      |             |
| 32       |             | Body – Lower Block, coil and roller chain                                                                                                                       |             |
|          | BH-1174     | (1/4 and 1/2 ton capacity hoists)                                                                                                                               | 1           |
|          | BH-1175     | (1 ton capacity hoists)                                                                                                                                         | 1*          |



Figure 9-1. FRAME AND EXTERNAL PARTS — Continued

| Ref. No. | Part Number | Description                                                                                                                                  | Qty. Req'd. |
|----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 33       | BH-1176     | Hook, Nut and Latch Assembly — Lower Block<br>(1/4 and 1/2 ton Capacity Hoists)                                                              | 1           |
|          | BH-1177     | (1 ton Capacity Hoists)                                                                                                                      | 1*          |
| 34       | BH-1182     | Latch Kit — Hook, lower<br>(1/4, and 1/2 ton Capacity Hoists)                                                                                | 1           |
|          | BH-1183     | (1 ton Capacity Hoists)                                                                                                                      | 1*          |
| 35       | BH-1178     | Washer — Thrust, needle bearing                                                                                                              | 2           |
| 36       | BH-1179     | Bearing Assembly — Needle, thrust                                                                                                            | 1           |
| 37       | BH-1180     | Shield — Bearing                                                                                                                             | 1           |
| 38       | BH-1181     | Pin — Spring drive                                                                                                                           | 1           |
| 39       | **          | Nut — Hook                                                                                                                                   | 1           |
| 40       |             | Pin — Connecting, lower block<br>(1/4 and 1/2 ton Capacity Hoists)                                                                           | 1           |
|          | BH-1037     | (1 ton Capacity Hoists)                                                                                                                      | 1*          |
| 41       | BH-1038     | Pin — Spring drive                                                                                                                           | 1           |
| 42       | BH-1046     | Stripper — Roller Chain<br>(1/4 & 1/2 ton Capacity Hoists)                                                                                   | 1           |
|          | BH-1047     | (1 & 2 ton Capacity Hoists)                                                                                                                  | 1           |
| 43       | BH-1048     | Guide Assembly — Roller Chain<br>(1/4 & 1/2 ton Capacity Hoists)                                                                             | 1           |
|          | BH-1049     | (1 & 2 ton Capacity Hoists)                                                                                                                  | 1           |
| 44       | BH-1050     | Link Assembly — Roller Chain (For connecting tail end of chain<br>only — Must not be used to join chain.)<br>(1/4 & 1/2 ton Capacity Hoists) | 1           |
|          | BH-1051     | (1 & 2 ton Capacity Hoists)                                                                                                                  | 1           |
| 45       | BH-1052     | Screw — Fillister Head, Self Locking                                                                                                         | 1           |
| 46       | BH-1053     | Anchor — Link, roller load chain<br>(1/4 & 1/2 ton Capacity Hoists)                                                                          | 1           |
|          | BH-1054     | (1 & 2 ton Capacity Hoists)                                                                                                                  | 1           |
| 47       | ††          | Actuator — Limit Lever<br>(For 1/4" Dia. Coil Chain and 5/8" Pitch Roller Chain)                                                             | 2           |
|          | BH-1098     | (For 5/16" Dia. Coil Chain and 3/4" Pitch Roller Chain)                                                                                      | 2           |
| 48       | BH-1099     | Pin — Grooved (For Actuator BH-1098)                                                                                                         | 2           |
|          | BH-1184     | Pin — Grooved (For Actuator BH-1099)                                                                                                         | 2           |
| 49       | BH-1057     | Bushing — Control Shaft                                                                                                                      | 2           |
| 50       | BH-1058     | Filler Assembly — Oil                                                                                                                        | 1           |
| 51       | BH-1183     | Latch Kit — Hook (upper) 1/4 thru 1 ton                                                                                                      | 1           |
| 52       | BH-1089*    | Pin — Spring drive                                                                                                                           | 2           |
| 53       | BH-1088*    | Stud — Suspension, nut and pin (Includes item 55)                                                                                            | 1           |
| 54       | BH-1087*    | Bracket — Suspension                                                                                                                         | 1*          |
| 55       | BH-1092     | Washer (.0747 Thk.)                                                                                                                          | 1           |
|          | BH-1186     | Washer (.0478 Thk.)                                                                                                                          | As Req'd.   |
| 56       | BH-1055     | Screw & Integral Lockwasher — Round Head                                                                                                     | 2           |
| 57       | BH-1056     | Cover — Brake Opening                                                                                                                        | 1           |

\* Refer to Figure 9-2 for 2 Ton Model Upper Suspension, Load Chain and Lower Block Parts.  
Refer to Figure 9-3 for 3 Ton Model Upper Suspension, Load Chain and Lower Block Parts.

\*\* Hook and suspension bolt nuts are not serviced separately. They are available only with hook or bolt as assemblies.

| *** | Load Chain Assemblies listed are for hoists with standard 10 ft. lifts. Bulk chain is available in 1 ft. increments and 50 ft. lengths as follows: | Type Chain                  | 50' Lengths   | Bulk    |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------|---------|
|     |                                                                                                                                                    |                             |               |         |
|     |                                                                                                                                                    | Roller (5/8" Pitch)         | BH-1064       | BH-1065 |
|     |                                                                                                                                                    | Roller (3/4" Pitch)         | BH-1067       | BH-1068 |
|     |                                                                                                                                                    | Coil (1/4" Dia.)            | Not Available | BH-1066 |
|     |                                                                                                                                                    | Coil (5/16" Dia.)           | Not Available | BH-1069 |
|     |                                                                                                                                                    | Coil (1/4" Dia. cad.plate)  | Not Available | BH-1083 |
|     |                                                                                                                                                    | Coil (5/16" Dia. cad.plate) | Not Available | BH-1093 |

†† An urethane Bumper (BH-1063) is used over the top of the steel limit lever actuator at lower block on all high speed 64 fpm hoists and single phase 32 fpm hoists.



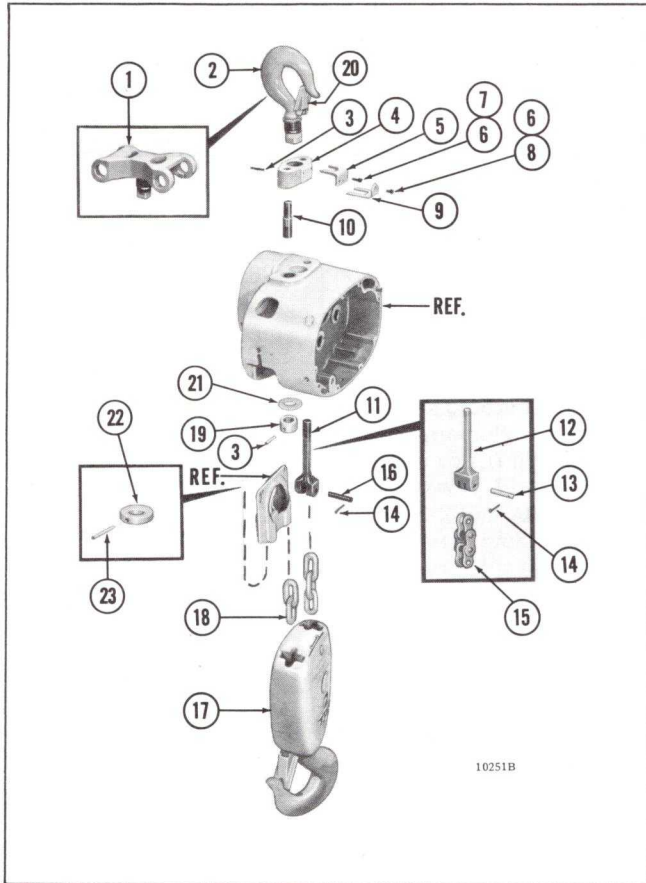


Figure 9-2. UPPER SUSPENSION  
LOAD CHAIN AND LOWER BLOCK PARTS  
(2 Ton Capacity Hoists)

| Ref. No. | Part Number     | Description                                                                             | Qty. Req'd. |
|----------|-----------------|-----------------------------------------------------------------------------------------|-------------|
| 1        | 905422          | Bracket Assembly Kit - Lug Suspension (Coil Chain Model Only. Includes Items 6, 8 & 9). | 1           |
| 2        | BH-1102         | Hook Assembly - Upper (Includes Item 5, 6, 7, & 20)                                     | 1           |
| 3        | BH-1030         | Pin - Drive                                                                             | 3           |
| 4        | BH-1104         | Block Assembly - Upper (Coil Chain Models. Includes Items 3, 10, 11, 14, 16, 19 & 21)   | 1           |
|          | BH-1105         | (Roller Chain Models. Includes Items 3, 10, 12, 13, 14, 19 & 21)                        | 1           |
| 5        | BH-1106         | Lock Assembly - Suspension Bushing                                                      | 1           |
| 6        | BH-1107         | Lockwasher                                                                              | 3           |
| 7        | BH-1108         | Screw - Hex. Socket Head                                                                | 2           |
| 8        | BH-1109         | Screw - Hex. Socket Head                                                                | 1           |
| 9        | BH-1061         | Plate - Lock (Coil Chain Lug Suspension Models Only)                                    | 1           |
| 10       | *               | Stud - Upper Block                                                                      | 1           |
| 11       | *               | Anchor - Coil Load Chain                                                                | 1           |
| 12       | *               | Anchor - Roller Load Chain                                                              | 1           |
| 13       | BH-1110         | Pin - Roller Chain Anchor                                                               | 1           |
| 14       | BH-1111         | Pin - Cotter                                                                            | 1           |
| 15**     | BH-1112         | Chain Assembly - Roller Load (3/4" Pitch)                                               | 1           |
|          | BH-1076         | Repair Link - 3/4" Pitch Roller Chain (Not Shown)                                       | As Req'd.   |
| 16       | BH-1113         | Pin - Coil Chain Anchor                                                                 | 1           |
| 17       | (See Fig. 9-12) | Block Assembly - Lower (Coil Chain Models)                                              | 1           |
|          | (See Fig. 9-13) | Block Assembly - Lower (Roller Chain Models)                                            | 1           |
| 18**     | BH-1114         | Chain Assembly - Coil Load                                                              | 1           |
|          | BH-1115         | Chain Assembly - Coil Load (Cad. Plated) Extra Heavy Duty Hoists                        | 1           |
| 19       | *               | Nut - Upper Block Stud                                                                  | 1           |
| 20       | BH-2213         | Latch Kit - Hook                                                                        | 1           |
| 21       | BH-1029         | Washer - Thrust                                                                         | 1           |
| 22       | BH-1099         | Actuator - Limit Lever                                                                  | 1           |
| 23       | BH-1185         | Pin - Grooved                                                                           | 1           |

\* Not available as individual parts. Order upper block assembly, Item 4.

\*\* Load Chain Assemblies listed are for hoists with standard 10 ft. lifts. Bulk chain is available in 1 ft. increments and 50 ft. lengths as follows:

| Type Chain                   | 50' Lengths   | Bulk    |
|------------------------------|---------------|---------|
| Roller (3/4" Pitch)          | BH-1067       | BH-1068 |
| Coil (5/16" Dia.)            | Not Available | BH-1069 |
| Coil (5/16" Dia. cad. plate) | Not Available | BH-1093 |

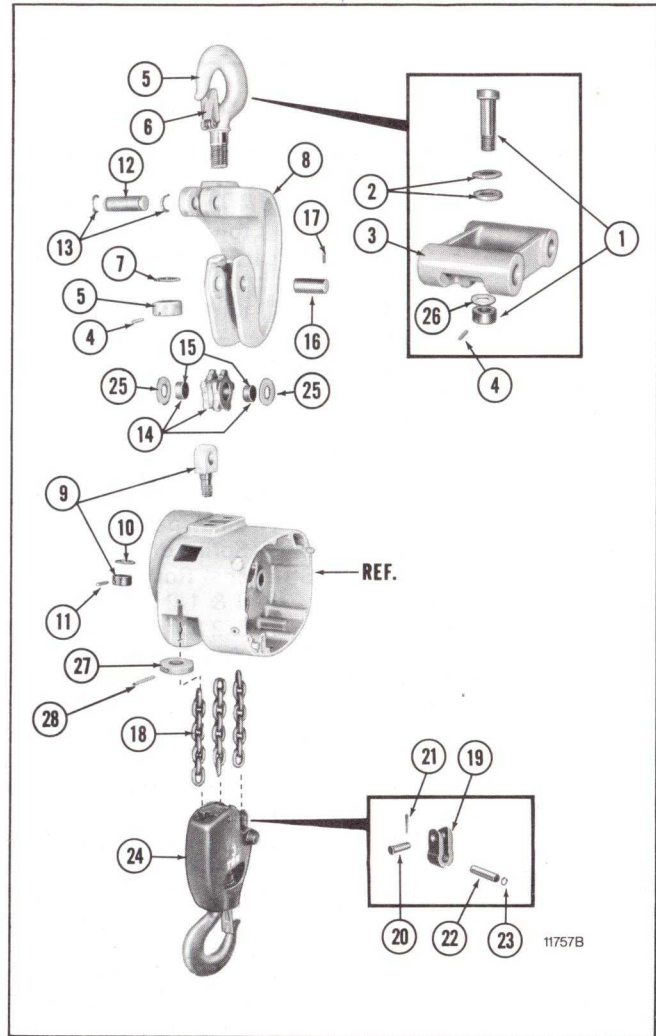


Figure 9-3. UPPER SUSPENSION, LOAD CHAIN AND LOWER BLOCK PARTS  
(3 Ton Capacity Hoists)

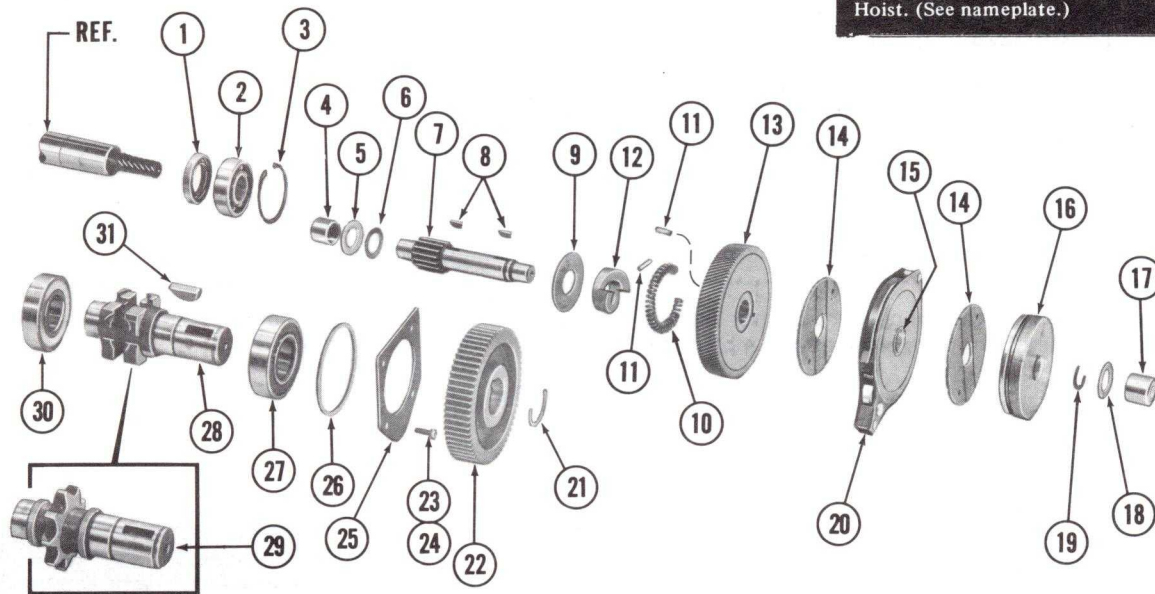
| Ref. No. | Part Number     | Description                                     | Qty. Req'd. |
|----------|-----------------|-------------------------------------------------|-------------|
| 1        | BH-1131         | Suspension Pin & Nut Assem.                     | 1           |
| 2        | BH-1132         | Spherical Washer                                | 1 Pr.       |
| 3        | 905424          | Suspension Lug Kit (Includes Item 1, 2, 4 & 26) | 1           |
| 4        | BH-1134         | Pin - Grooved                                   | 1           |
| 5        | BH-1135         | Hook/Latch & Nut (Includes Item 6)              | 1           |
| 6        | BH-2214         | Latch Kit, Hook                                 | 1           |
| 7        | BH-2217         | Washer, Thrust                                  | 1           |
| 8        | BH-1138         | Hanger                                          | 1           |
| 9        | BH-1139         | Connecting Rod Assem.                           | 1           |
| 10       | BH-1029         | Washer, Thrust                                  | 1           |
| 11       | BH-1030         | Pin, Grooved                                    | 1           |
| 12       | BH-1142         | Pin, Connection                                 | 1           |
| 13       | BH-1143         | Ring, Retaining                                 | 2           |
| 14       | BH-1144         | Sprocket & Bushing Assem. (Includes Item 15)    | 1           |
| 15       | BH-1145         | Bushing                                         | 2           |
| 16       | BH-1146         | Pin, Sprocket                                   | 1           |
| 17       | BH-1147         | Pin, Grooved                                    | 1           |
| 18       | BH-1148         | Chain Assembly, Coil Load                       | 1           |
| 19       | BH-1149         | Link, Connecting                                | 1           |
| 20       | BH-1150         | Pin, Anchor                                     | 1           |
| 21       | BH-1151         | Pin, Cotter                                     | 1           |
| 22       | BH-1152         | Pin, Dowel                                      | 1           |
| 23       | BH-1153         | Ring, Retaining                                 | 1           |
| 24       | (See Fig. 9-12) | Block Assembly, Lower, Coil Chain               | 1           |
| 25       | BH-2210         | Washer, Thrust                                  | 2           |
| 26       | BH-1154         | Washer                                          | 1           |
| 27       | BH-1099         | Actuator - Limit Lever                          | 1           |
| 28       | BH-1185         | Pin - Grooved                                   | 1           |

#### NOTICE

Always insist on factory approved **BUDGIT** Hoist replacement parts when servicing this equipment. Parts are available from your local Authorized Repair Station.



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)



11898

Figure 9-4. GEARING AND LOAD BRAKE PARTS  
1/4 & 1/2 Ton Capacity

| Ref. No. | Part Number | Description                                                                               | Qty. Req'd. |
|----------|-------------|-------------------------------------------------------------------------------------------|-------------|
| 1        | BH-1201     | Seal — Oil, motor shaft                                                                   | 1           |
| 2        | BH-1202     | Bearing Assembly — Ball, motor shaft                                                      | 1           |
| 3        | BH-1203     | Ring — Retaining, Internal                                                                | 1           |
| 4        | BH-1237     | Bearing Assembly — Needle, 11/16" I.D. (36 rollers, grease retained)                      | 1           |
| 5        | BH-1205     | Bearing — Thrust, bronze                                                                  | 1           |
| 6        | BH-1206     | Washer — Thrust, 11/16" I.D. (Used with 14 tooth Pinion Load Brake Shaft — BH-1207 below) | 1           |
| 7        | BH-1207     | Shaft & Integral Pinion — load brake, 14 teeth                                            | 1           |
|          | BH-1208     | 23 teeth                                                                                  | 1           |
|          | BH-1209     | 36 teeth                                                                                  | 1           |
| 8        | BH-1210     | Key — Woodruff                                                                            | 2           |
| 9        | BH-1239     | Retainer — Spring, load brake                                                             | 1           |
| 10       | BH-1212     | Spring — load brake (Plain — no color code)                                               | 1           |
|          | BH-1213     | Spring — load brake (Yellow color code)                                                   | 1           |
| 11       | BH-1214     | Pin — Grooved                                                                             | 2           |
| 12       | BH-1216     | Cam — load brake                                                                          | 1           |
| 13       | *           | Gear & Clutch Assembly — load brake                                                       |             |
|          | BH-1240     | (For use with 1/4 H.P. Motor)                                                             | 1           |
|          | BH-1241     | (For use with 1/2 H.P. Motor)                                                             | 1           |
|          | BH-1242     | (For use with 1 H.P. Motor)                                                               | 1           |
| 14       | BH-1218     | Disc — Friction, load brake                                                               | 2           |
| 15       | BH-1238     | Bushing — Ratchet                                                                         | 2           |
| 16       | BH-1219     | Flange — load brake                                                                       | 1           |
| 17       | BH-1220     | Bearing Assembly — Needle, 5/8" I.D.                                                      | 1           |
| 18       | BH-1221     | Washer — Thrust, 5/8" I.D.                                                                | 1           |
| 19       | BH-1222     | Ring — Snap, brake flange                                                                 | 1           |
| 20       | BH-1223     | Pawl & Ratchet Assembly — load brake (includes item 15)                                   | 1           |
| 21       | BH-1224     | Ring — Snap, sprocket gear                                                                | 1           |
| 22       |             | Gear — Sprocket                                                                           |             |
|          | BH-1225     | 74 teeth                                                                                  | 1           |
|          | BH-1226     | 65 teeth                                                                                  | 1           |
|          | BH-1227     | 52 teeth                                                                                  | 1           |

(Continued on following page.)



Figure 9-4. GEARING AND LOAD BRAKE PARTS – Continued

| Ref. No. | Part Number | Description                            | Qty. Req'd. |
|----------|-------------|----------------------------------------|-------------|
| 23       | BH-1228     | Screw – Fillister Head Machine         | 4           |
| 24       | BH-1229     | Lockwasher – Spring Type               | 4           |
| 25       | BH-1230     | Plate – Retainer, sprocket bearing     | 1           |
| 26       | BH-1231     | Gasket – Ring, sprocket bearing        | 1           |
| 27       | BH-1232     | Bearing Assembly – Ball, sprocket      | 1           |
| 28       | BH-1233     | Sprocket – Coil chain (1/4" Dia. Wire) | 1           |
| 29       | BH-1234     | Sprocket – Roller chain (5/8" Pitch)   | 1           |
| 30       | BH-1235     | Bearing Assembly – Ball, sprocket      | 1           |
| 31       | BH-1236     | Key – Woodruff                         | 1           |

\* This gear and clutch assembly should not be field disassembled. Replace assembly only as clutch pressure is preset at factory based on hoist capacity and motor H.P.

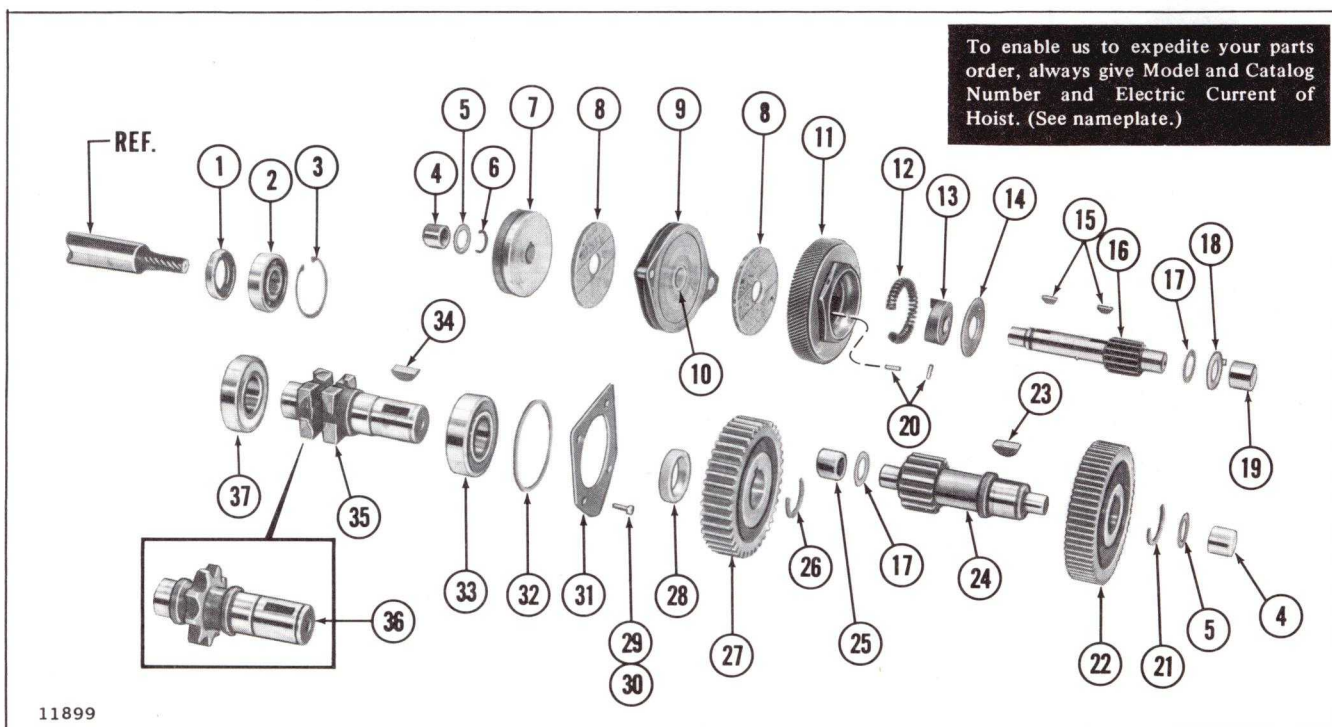


Figure 9-5. GEARING AND LOAD BRAKE PARTS – (1, 2 & 3 Ton Capacity Hoists)

| Ref. No. | Part Number | Description                                             | Qty. Req'd. |
|----------|-------------|---------------------------------------------------------|-------------|
| 1        | BH-1201     | Seal – Oil, motor shaft                                 | 1           |
| 2        | BH-1202     | Bearing Assembly – Ball, motor shaft                    | 1           |
| 3        | BH-1203     | Ring – Retaining, Internal                              | 1           |
| 4        | BH-1220     | Bearing Assembly – Needle, 5/8" I.D.                    | 2           |
| 5        | BH-1221     | Washer – Thrust, 5/8" I.D.                              | 2           |
| 6        | BH-1222     | Ring – Snap, brake flange                               | 1           |
| 7        | BH-1219     | Flange – Load Brake                                     | 1           |
| 8        | BH-1218     | Disc – Friction, load brake                             | 2           |
| 9        | BH-1223     | Pawl & Ratchet Assembly – Load Brake (includes item 15) | 1           |
| 10       | BH-1238     | Bushing – Ratchet                                       | 1           |

(Continued on following page.)



Figure 9-5. GEARING AND LOAD BRAKE PARTS — Continued

| Ref.<br>No. | Part<br>Number | Description                                                          | Qty.<br>Req'd. |
|-------------|----------------|----------------------------------------------------------------------|----------------|
| 11          | *              | Gear & Clutch Assembly.— Load Brake                                  |                |
|             | BH-1241        | (For use with 1/2 H.P. Motor)                                        | 1              |
|             | BH-1242        | (For use with 1 & 2-1/2 H.P. Motors)                                 | 1              |
| 12          | BH-1212        | Spring — Load Brake (Plain — no color code)                          | 1              |
| 13          | BH-1216        | Cam — Load Brake                                                     | 1              |
| 14          | BH-1239        | Retainer — Spring, Load Brake                                        | 1              |
| 15          | BH-1210        | Key — Woodruff                                                       | 2              |
| 16          |                | Shaft & Integral Pinion — Load Brake                                 |                |
|             | BH-1207        | 14 teeth                                                             | 1              |
|             | BH-1208        | 23 teeth                                                             | 1              |
| 17          | BH-1206        | Washer — Thrust, 11/16" I.D.                                         | 2              |
| 18          | BH-1205        | Bearing — Thrust, bronze                                             | 1              |
| 19          | BH-1204        | Bearing Assembly — Needle, 11/16" I.D.                               | 1              |
| 20          | BH-1214        | Pin — Grooved                                                        | 2              |
| 21          | BH-1224        | Ring — Snap, intermediate gear                                       | 1              |
| 22          |                | Gear — Intermediate                                                  |                |
|             | BH-1225        | 74 teeth                                                             | 1              |
|             | BH-1226        | 65 teeth                                                             | 1              |
| 23          | BH-1236        | Key — Woodruff                                                       | 1              |
| 24          | BH-1304        | Shaft & Integral Pinion — Intermediate                               | 1              |
| 25          | BH-1237        | Bearing Assembly — Needle, 11/16" I.D. (36 roller, greased retained) | 1              |
| 26          | BH-1305        | Ring — Snap, sprocket gear                                           | 1              |
| 27          | BH-1306        | Gear — Sprocket                                                      | 1              |
| 28          | BH-1307        | Spacer — Sprocket Gear                                               | 1              |
| 29          | BH-1228        | Screw — Fillister Head Machine                                       | 4              |
| 30          | BH-1229        | Lockwasher — Spring Type                                             | 4              |
| 31          | BH-1230        | Plate — Retainer, sprocket bearing                                   | 1              |
| 32          | BH-1231        | Gasket — Ring, sprocket bearing                                      | 1              |
| 33          | BH-1232        | Bearing Assembly — Ball, sprocket                                    | 1              |
| 34          | BH-1308        | Key — Woodruff, sprocket                                             | 1              |
| 35          | BH-1309        | Sprocket — Coil Chain                                                | 1              |
| 36          | BH-1310        | Sprocket — Roller Chain                                              | 1              |
| 37          | BH-1235        | Bearing Assembly — Ball, sprocket                                    | 1              |

\* This gear and clutch assembly should not be field disassembled. Replace assembly only as clutch pressure is preset at factory based on hoist capacity and motor H.P.

### NOTES



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)

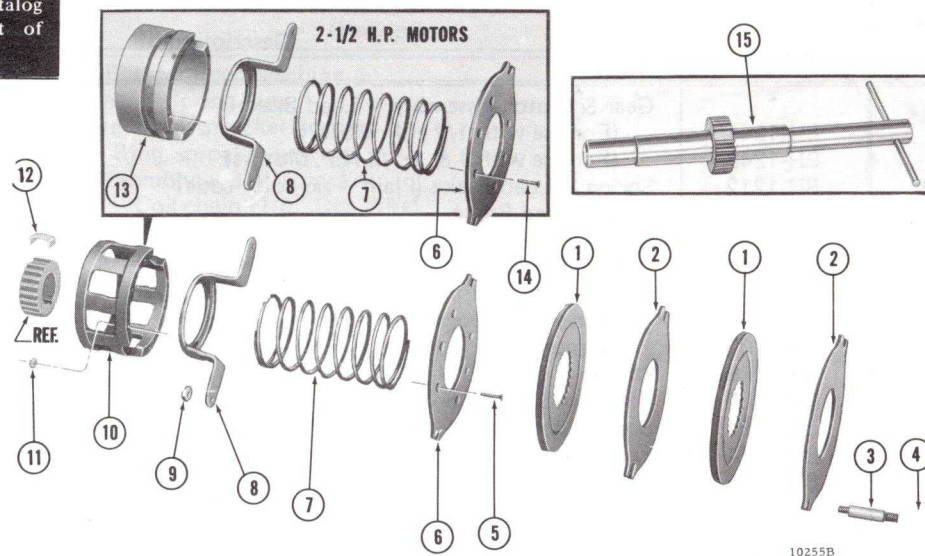


Figure 9-6. MAGNETIC MOTOR BRAKE PARTS  
(3 Phase, Standard Model Hoists & Extra Heavy Duty Hoists)

| Ref. No. | Part Number | Description                                                  | Qty. Req'd. |
|----------|-------------|--------------------------------------------------------------|-------------|
| 1        | BH-1405     | Disc Assembly – Friction                                     | 2           |
| 2        | BH-1404     | Plate – Friction                                             | 2           |
| 3        | BH-1501     | Pin – Support, plate                                         | 2           |
| 4        | BH-1407     | Ring – Retaining                                             | 2           |
| 5        | BH-1502     | Screw – Flat Socket Head                                     | 6           |
| 6        | *           | Plate – Compression                                          | 1           |
| 7        | BH-1504     | Spring – Compression (1/4 & 1/2 H.P. Motors)                 | 1           |
|          | BH-1505     | Spring – Compression (1 & 2½ H.P. Motors), color coded green | 1           |
| 8        | *           | Cage – Spring                                                | 1           |
| 9        | BH-1507     | Nut – Hex, self locking                                      | 2           |
| 10       | *           | Plunger                                                      | 1           |
| 11       | BH-1509     | Nut – Hex, self locking                                      | 6           |
| 12       | BH-1435     | Spring – Friction Disc (Not used on Extra Heavy Duty Hoists) | 1           |
| 13       | *           | Plunger (2½ H.P. Motor)                                      | 1           |
| 14       | BH-1510     | Screw – Flat Head (2½ H.P. Motor)                            | 6           |
| 15       | 224704-1    | Tool – Brake Disc Alignment                                  | 1           |

\*These items not available separately (for assemblies see below)

BH-1511 Cage & Plunger Assem. (Includes items 5, 6, 8, 10 & 11)

BH-1512 Cage & Plunger Assem. (Includes items 6, 8, 13 & 14) – 2½ HP

#### NOTES







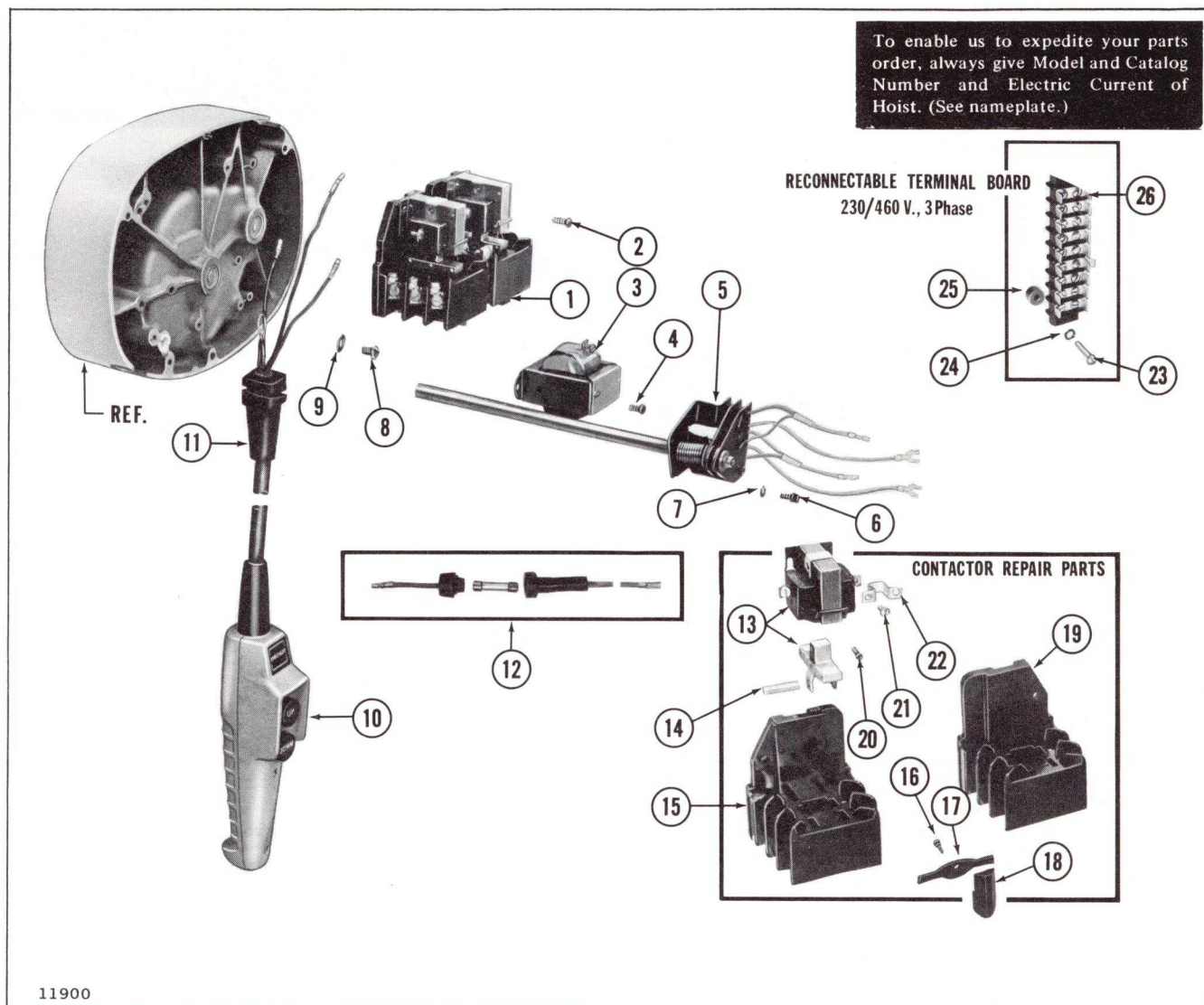


Figure 9-8. ELECTRICAL CONTROL UNITS

| Ref. No. | Part Number    | Description                                | Quantity Required |          |             |
|----------|----------------|--------------------------------------------|-------------------|----------|-------------|
|          |                |                                            | 115/1/60          | 230/1/60 | All 3 Phase |
| 1        | BH-2101        | Contactor Assembly — Complete, 115 v. Coil | 1                 | 1        | —           |
|          | BH-2102        | Contactor Assembly — Complete, 24 v. Coil  | 1                 | 1        | —           |
|          | BH-2103        | Contactor Assembly — Complete, 24 v. Coil  | —                 | —        | 1           |
|          | BH-2145        | Contactor Assembly — Complete, 115v. Coil  | —                 | —        | 1           |
| 2        | BH-1701        | Screw & Integral Lockwasher — Rd. Hd.      | 2                 | 2        | 2           |
| 3        | BH-1706        | Transformer — 115v./24v.                   | 1                 | —        | —           |
|          | BH-1703        | Transformer — 230v./24v.                   | —                 | 1        | —           |
|          | BH-1716        | Transformer — 230v./115v.                  | —                 | 1        | —           |
|          | BH-1702        | Transformer — 208v./24v.                   | —                 | —        | 1           |
|          | BH-1715        | Transformer — 208v./115v.                  | —                 | —        | 1           |
|          | BH-1705        | Transformer — 575v./24v.                   | —                 | —        | 1           |
|          | BH-1718        | Transformer — 575v./115v.                  | —                 | —        | 1           |
|          | BH-1707        | Transformer — 230-460v./24v.               | —                 | —        | 1           |
|          | BH-1719        | Transformer — 230-460v./115v.              | —                 | —        | 1           |
| 4        | BH-1708        | Screw & Integral Lockwasher — Round Head   | 2                 | 2        | 2           |
| 5        | (See Fig. 9-9) | Switch & Shaft Assembly — Limit            | 1                 | 1        | 1           |
| 6        | BH-1709        | Screw — Hex Socket Head                    | 2                 | 2        | 2           |
| 7        | BH-1710        | Lockwasher                                 | 2                 | 2        | 2           |
| 8        | BH-1711        | Screw — Round Head Machine                 | 1                 | 1        | 1           |
| 9        | BH-1712        | Washer — Flat                              | 2                 | 2        | 2           |

(Continued on following page.)



Figure 9-8. ELECTRICAL CONTROL UNITS – Continued

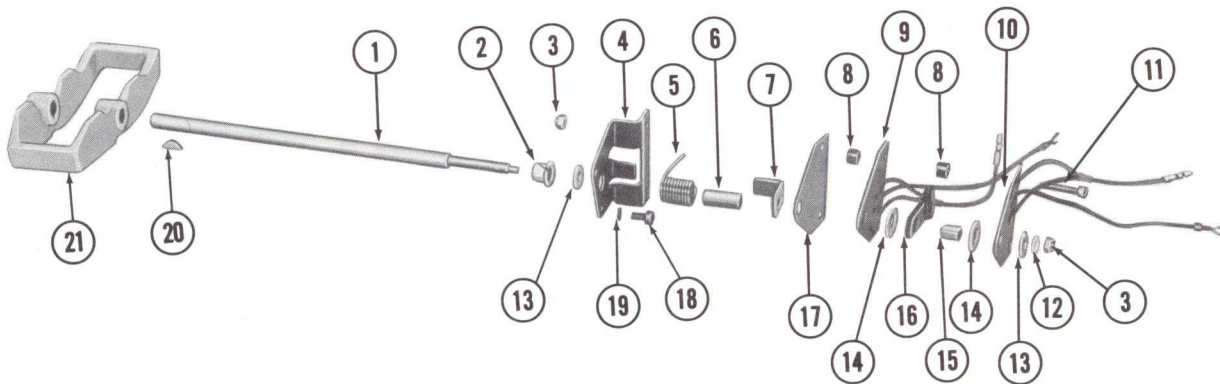
| Ref.<br>No. | Part<br>Number      | Description                                            | Quantity Required |          |             |
|-------------|---------------------|--------------------------------------------------------|-------------------|----------|-------------|
|             |                     |                                                        | 115/1/60          | 230/1/60 | All 3 Phase |
| 10          | (Figs. 9-10 & 9-11) | Push Button Station & Conductor Cable Assembly         | 1                 | 1        | 1           |
| 11          | BH-1713             | Grommet – Strain Reliever, upper                       | 1                 | 1        | 1           |
| 12          | (See Fig. 9-9)      | Fuse, Fuse Holder and Wire Assembly                    | 1                 | 1        | 1           |
| 13          | BH-2106             | Solenoid Assembly – 24 volt                            | —                 | —        | 2           |
|             | BH-2146             | Solenoid Assembly – 115 volt                           | —                 | —        | 2           |
|             | BH-2107             | Solenoid Assembly – 24 volt                            | 2                 | 2        | —           |
|             | BH-2108             | Solenoid Assembly – 115 volt                           | 2                 | —        | —           |
| 14          | BH-2105             | Pin – Pusher, Contactor (Nylon)                        | 2                 | 2        | 2           |
| 15          | BH-2129             | Board – Contact (Right and Left)                       | 2                 | 2        | —           |
|             | BH-2104             | Board – Contact (Left Hand)                            | —                 | —        | 1           |
| 16          | BH-2121             | Screw – Shoulder, Interlock                            | 1                 | 1        | 1           |
| 17          | BH-2122             | Bar – Interlock                                        | 1                 | 1        | 1           |
| 18          | BH-2119             | Support – Interlock Bar                                | 1                 | 1        | 1           |
| 19          | BH-2112             | Board – Contact (Right Hand)                           | —                 | —        | 1           |
| 20          | BH-2111             | Screw & Lockwasher – Fillister Head                    | 4                 | 4        | 4           |
| 21          | BH-2110             | Screw – Terminal, Solenoid                             | 4                 | 4        | 4           |
| 22          | BH-2109             | Jumper                                                 | 1                 | 1        | 1           |
| 23          | BH-2144             | Screw – Round Head Machine                             | —                 | —        | 2           |
| 24          | BH-2019             | Lockwasher – Spring type                               | —                 | —        | 2           |
| 25          | BH-2143             | Spacer – Terminal Block (3 phase reconnectable models) | —                 | —        | 2           |
| 26          | BH-2140             | Block – Terminal (3 phase reconnectable models)        | —                 | —        | 1           |

NOTE: Contacts, springs and terminals are not available separately, but are furnished in kit form. Order kit BH-2141 for three phase contactors (BH-2103 and BH-2145); and, kit BH-2142 for single phase contactors (BH-2101 and BH-2102).

#### NOTES



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)



11901

Figure 9-9. LIMIT LEVER AND SWITCH PARTS

| Ref. No. | Part Number | Description                                                          | Qty. Req'd. |
|----------|-------------|----------------------------------------------------------------------|-------------|
|          | BH-1825     | Switch & Shaft Assembly – Limit (Includes Items 1 & 3 thru 17)       | 1           |
| 1        | BH-1802     | Shaft – Control                                                      | 1           |
| 2        | BH-1422     | Bearing – Flanged Sleeve                                             | 1           |
| 3        | *           | Nut – Hex, self locking                                              | 3           |
| 4        | *           | Bracket – Retainer                                                   | 1           |
| 5        | BH-1417     | Spring – Centering                                                   | 1           |
| 6        | *           | Tube – Spacer                                                        | 1           |
| 7        | *           | Lever – Centering                                                    | 1           |
| 8        | *           | Spacer                                                               | 4           |
| 9        | BH-1828     | Contact Board & Wire Assembly – “Up” Limit Switch                    | 1           |
| 10       | BH-1829     | Contact Board & Wire Assembly – “Down” Limit Switch                  | 1           |
| 11       | *           | Screw – Round Head Cap                                               | 2           |
| 12       | BH-1819     | Washer – Flat                                                        | 1           |
| 13       | *           | Washer – Spacer                                                      | 2           |
| 14       | *           | Washer – Spacer, contact slide arm                                   | 2           |
| 15       | *           | Spacer – Drive, contact slide arm                                    | 1           |
| 16       | BH-1815     | Arm Assembly, contact slide                                          | 1           |
| 17       | *           | Insulation Strip                                                     | 1           |
| 18       | BH-1419     | Screw – Hex Socket Head                                              | 2           |
| 19       | BH-1420     | Lockwasher – Spring Type                                             | 2           |
| 20       | BH-1424     | Key – Woodruff                                                       | 1           |
| 21       | BH-1830     | Lever – Limit                                                        | 1           |
| 22       | BH-1822     | Jumper Wire Assem. – 115 volt without Transformer (not illustrated)  | 1           |
| **23     | BH-1823     | Fuse, Fuse Holder and Wire Assem. (w/½A. Fuse) for 115V. Transformer | 1           |
| **24     | BH-1824     | Fuse, Fuse Holder and Wire Assem. (w/3A. Fuse) for 24V. Transformer  | 1           |
| 25       | BH-1826     | Connector – Wire, Insulated (Not Illustrated)                        | 3           |

Note: Replacement fuses are standard automotive type and should be purchased locally.

\*Furnished only with limit switch and shaft assembly.

\*\*See Fig. 9-8 for illustration.



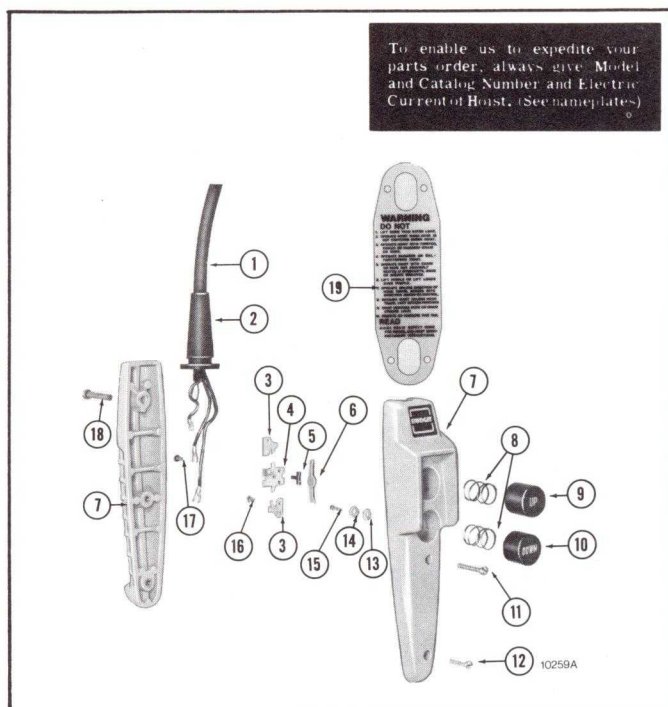


Figure 9-10. PUSH BUTTON STATION  
& CONDUCTOR CABLE ASSEMBLY  
(Standard Model Hoists)

| Ref. No. | Part Number | Description                                                              | Qty. Req'd. |
|----------|-------------|--------------------------------------------------------------------------|-------------|
| *        | BH-1901     | Push Button Station & Conductor Cable Assembly                           | 1           |
| 1*       | BH-1902     | Cable Assembly — Conductor, flexible (Includes upper and lower grommets) | 1           |
| 2        | BH-1903     | Grommet — Strain Reliever, lower                                         | 1           |
| BH-1904  |             | Station Assembly — Push Button (Includes Items 3 thru 19)                | 1           |
| 3        | **          | Contact — Stationary                                                     | 2           |
| 4        | **          | Contact — Stationary, center                                             | 1           |
| 5        | **          | Retainer — Interlock Bar                                                 | 2           |
| 6        | **          | Bar — Interlock                                                          | 2           |
| 7        | BH-1909     | Body Assembly (Front & Rear Halves)                                      | 1           |
| 8        | BH-1910     | Spring — Push Button                                                     | 2           |
| 9        | BH-1911     | Button — Push, "Up"                                                      | 1           |
| 10       | BH-1912     | Button — Push, "Down"                                                    | 1           |
| 11       | BH-1913     | Screw — Fillister Head Machine                                           | 1           |
| 12       | BH-1914     | Screw — Fillister Head Machine                                           | 1           |
| 13       | **          | Spring — Contact                                                         | 2           |
| 14       | **          | Contact — Movable                                                        | 2           |
| 15       | **          | Screw — Shoulder                                                         | 2           |
| 16       | **          | Screw — Round Head Machine                                               | 6           |
| 17       | **          | Screw — Pan Head Machine, plated                                         | 3           |
| 18       | BH-1921     | Screw — Fillister Head Machine                                           | 1           |
| 19       | BH-1923     | Label — Operator Warning (A.N.S.I.)                                      | 1           |

\* These assemblies are for standard 10' lift hoists. When ordering replacements for hoists with other than standard lifts, specify lift.

\*\* These parts not available separately.  
Order Contact Kit — BH-1922

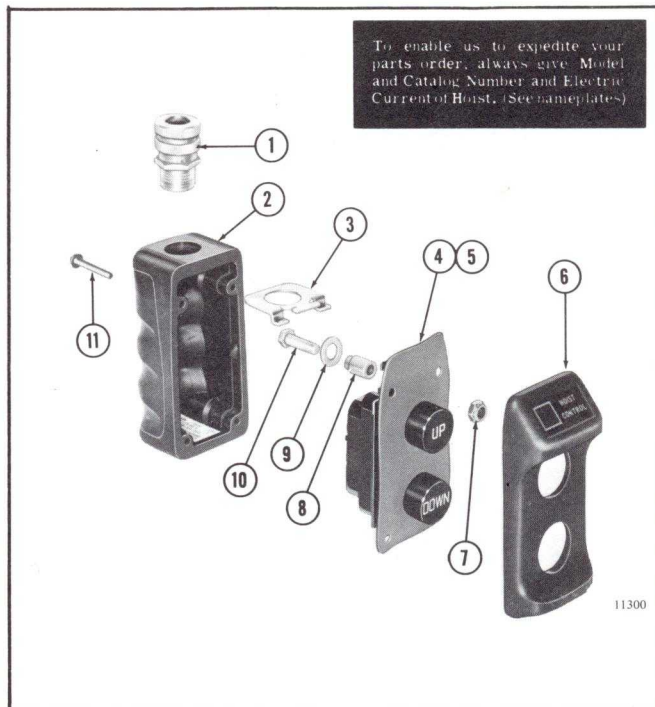


Figure 9-11. PUSH BUTTON STATION  
& CONDUCTOR CABLE ASSEMBLY  
(Extra Heavy Duty Hoist & Weatherproof Service)

| Ref. No. | Part Number | Description                                                 | Qty. Req'd. |
|----------|-------------|-------------------------------------------------------------|-------------|
| *        | BH-1925     | Push Button Station & Conductor Cable Assembly              | 1           |
| 1*       | BH-1926     | Conductor Cable Assembly (Not Shown)                        | 1           |
| BH-1927  |             | Push Button Station Assembly (Includes Items 2 thru 6 & 11) | 1           |
| 1        | BH-1928     | Cord Grip                                                   | 1           |
| 2        | BH-1929     | Body — Push Button Station                                  | 1           |
| 3        | BH-1930     | Anchor — Cord Grip                                          | 1           |
| 4        | BH-1931     | Interior Assembly Complete                                  | 1           |
| 5        | BH-1932     | Gasket — Cover                                              | 1           |
| 6        | BH-1933     | Cover — Push Button Station                                 | 1           |
| 7        | BH-1934     | Nut — Elastic Stop                                          | 1           |
| 8        | BH-1935     | Spacer — Strain Reliever                                    | 1           |
| 9        | BH-1936     | Washer — Flat                                               | 1           |
| 10       | BH-1937     | Bolt — Round Head                                           | 1           |
| 11       | BH-1938     | Screw — Cover                                               | 4           |

\* These assemblies are for standard 10' lift hoists. When ordering replacements for hoists with other than standard lifts, specify lift.

## NOTES



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)

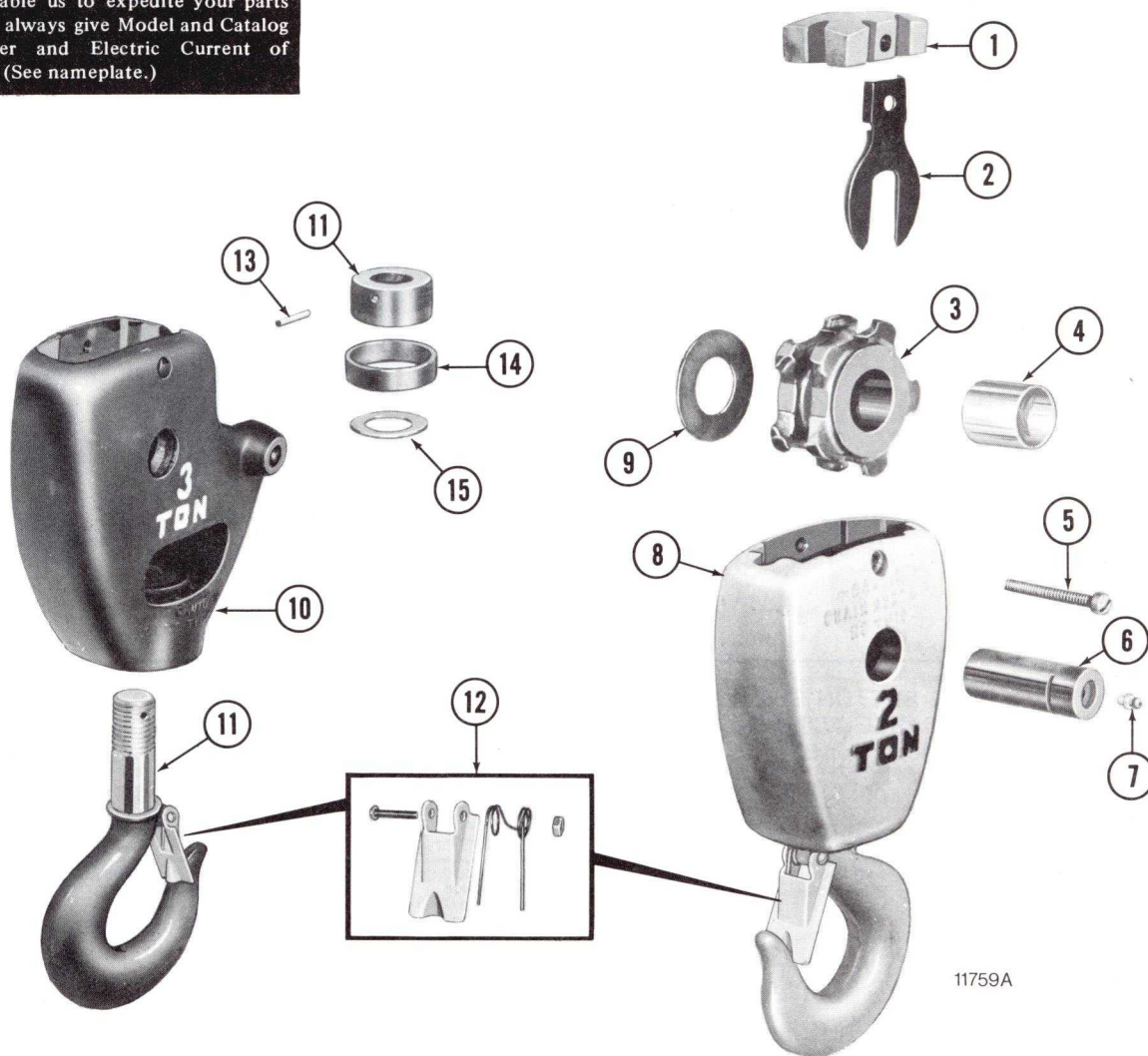
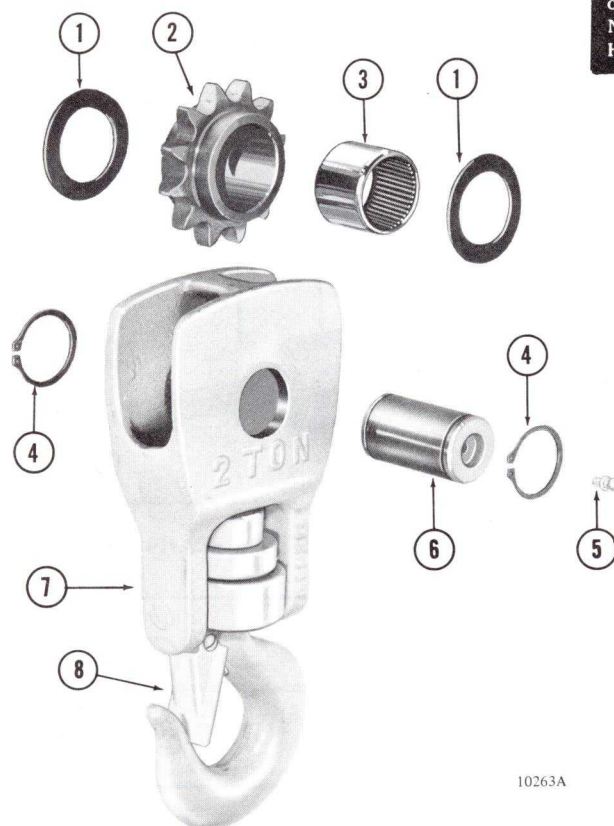


Figure 9-12. 2 & 3 TON LOWER BLOCK ASSEMBLIES (Coil Chain Model Hoists)

| Ref. No. | Part Number | Description                                     | Quantity 2 Ton | Required 3 Ton |
|----------|-------------|-------------------------------------------------|----------------|----------------|
|          | BH-2201     | Block Assembly – Lower Complete                 | 1              | —              |
|          | BH-2218     | Block Assembly – Lower Complete                 | —              | 1              |
| 1        | BH-2202     | Guide – Center                                  | 1              | 1              |
| 2        | BH-2203     | Lock – Sprocket Pin                             | 1              | 1              |
| 3        | BH-2204     | Sprocket – Coil Chain                           | 1              | 1              |
| 4        | BH-2205     | Bushing – Sprocket                              | 1              | 1              |
| 5        | BH-2206     | Screw – Fillister Head, Self locking            | 1              | 1              |
| 6        | BH-2207     | Pin – Sprocket                                  | 1              | 1              |
| 7        | BH-2208     | Fitting – Hydraulic Drive                       | 1              | 1              |
| 8        | BH-2209     | Body & Hook Assembly – Lower Block              | 1              | —              |
| 9        | BH-2210     | Washer, Thrust                                  | 1              | 1              |
| 10       | BH-2211     | Body Assembly – Lower Block                     | —              | 1              |
| 11       | BH-2212     | Hook/Latch & Nut (Includes Items 12, 13 and 15) | —              | 1              |
| 12       | BH-2213     | Latch Kit, Hook                                 | 1              | —              |
|          | BH-2214     | Latch Kit, Hook                                 | —              | 1              |
| 13       | BH-2215     | Pin, Grooved                                    | —              | 1              |
| 14       | BH-2216     | Shroud                                          | —              | 1              |
| 15       | BH-2217     | Washer, Thrust                                  | —              | 1              |



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)



10263A

Figure 9-13. 2 TON LOWER BLOCK ASSEMBLY — (Roller Chain Model Hoists)

| Ref. No. | Part Number | Description                                                  | Qty. Req'd. |
|----------|-------------|--------------------------------------------------------------|-------------|
|          | BH-2301     | Block Assembly — lower, complete                             | 1           |
| 1        | BH-2302     | Washer — Spring Thrust                                       | 2           |
| 2        | BH-2303     | Sprocket — Chain                                             | 1           |
| 3        | BH-2304     | Bearing Assembly — Needle                                    | 1           |
| 4        | BH-2305     | Ring — Retaining, external                                   | 2           |
| 5        | BH-2208     | Fitting — Hydraulic Drive                                    | 1           |
| 6        | BH-2307     | Pin — Sprocket                                               | 1           |
| 7        | BH-2308     | Body and Hook Assembly — Lower Block (Includes Item 8 below) | 1           |
| 8        | BH-2213     | Latch Kit — Hook                                             | 1           |

#### NOTICE

Always insist on factory approved **BUDGIT** Part replacement parts when servicing this equipment. Parts are available from your local Authorized Repair Station.



To enable us to expedite your parts order, always give Model and Catalog Number and Electric Current of Hoist. (See nameplate.)

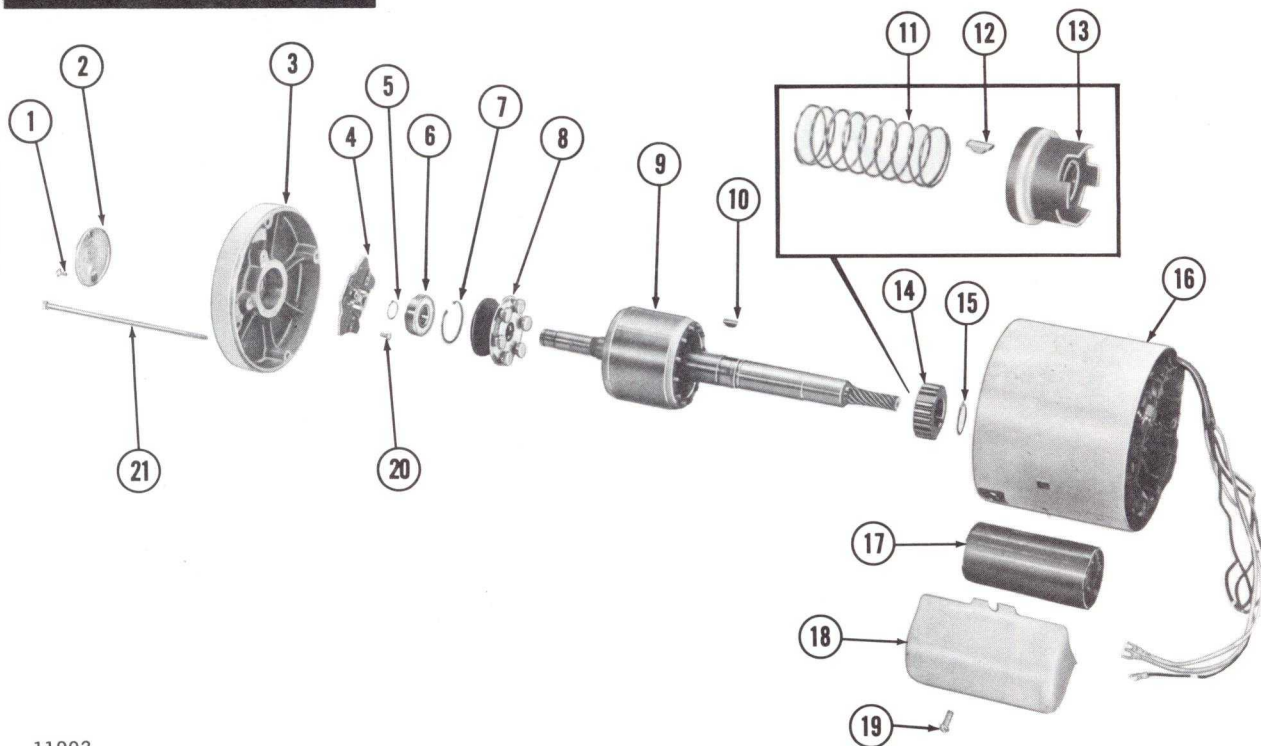


Figure 9-14. SINGLE PHASE MOTOR ASSEMBLIES

| Ref. No. | Part Number     | Description                                     | Quantity Required |          |        |
|----------|-----------------|-------------------------------------------------|-------------------|----------|--------|
|          |                 |                                                 | 1/4 H.P.          | 1/2 H.P. | 1 H.P. |
|          | (See Fig. 9-16) | Motor Assembly – Complete                       | 1                 | 1        | —      |
| 1        | BH-2401         | Screw – Round Head Self Tapping                 | 2                 | 2        | 2      |
| 2        | BH-2402         | Cover – Motor Shaft                             | 1                 | 1        | 1      |
| 3        | BH-2405         | Bell – End                                      | 1                 | 1        | 1      |
| 4        | BH-2406         | Switch Assembly – Stationary                    | 1                 | 1        | 1      |
| 5        | BH-2407         | Ring – Retaining, external                      | 2                 | 2        | 2      |
| 6        | BH-2408         | Bearing Assembly – Ball                         | 1                 | 1        | 1      |
| 7        | BH-2409         | Ring – Retaining, Internal                      | 1                 | 1        | 1      |
| 8        | BH-2410         | Switch Assembly – Centrifugal                   | 1                 | 1        | 1      |
| 9        | (See Fig. 9-16) | Rotor & Shaft Assembly                          | 1                 | 1        | 1      |
| 10       | BH-2411         | Key – Woodruff (For Ref. No. 14)                | 1                 | 1        | 1      |
| 11       | BH-2444         | Spring – Motor Brake                            | 1                 | —        | —      |
|          | BH-2449         | Spring – Motor Brake                            | —                 | 1        | —      |
|          | BH-2445         | Spring – Motor Brake                            | —                 | —        | 1      |
| 12       | BH-2447         | Key – Woodruff - Hi - Pro                       | 1                 | 1        | 1      |
| 13       | BH-2446         | Plunger, Motor Brake                            | 1                 | 1        | 1      |
| 14       | BH-2412         | Hub – Motor Brake, splined                      | 1                 | 1        | 1      |
| 15       | BH-2413         | Ring – Retaining                                | 1                 | 1        | 1      |
| 16       | (See Fig. 9-16) | Stator Assembly.(Includes Items 6, 16, 17 & 18) | 1                 | 1        | 1      |
| 17       | BH-2414         | Capacitor Assembly – 115 volt                   | 1                 | —        | —      |
|          | BH-2415         | Capacitor Assembly – 230 volt                   | 1                 | —        | —      |
|          | BH-2416         | Capacitor Assembly – 115 volt                   | —                 | 1        | —      |
|          | BH-2417         | Capacitor Assembly – 230 volt                   | —                 | 1        | —      |
|          | BH-2418         | Capacitor Assembly – 230 volt                   | —                 | —        | 1      |
| 18       | BH-2419         | Cover – Capacitor                               | 1                 | 1        | 1      |
|          | BH-2420         | End Cap – Capacitor (Not Shown)                 | 1                 | 1        | 1      |
| 19       | BH-2421         | Screw – Truss Head Self Tapping                 | 2                 | 2        | 2      |
| 20       | BH-2448         | Screw – Hex Washer-Head Self Tapping            | 4                 | 4        | 4      |
| 21       | BH-2440         | Bolt – Motor Mounting                           | 4                 | 4        | —      |
|          | BH-2441         | Bolt – Motor Mounting                           | —                 | —        | 4      |



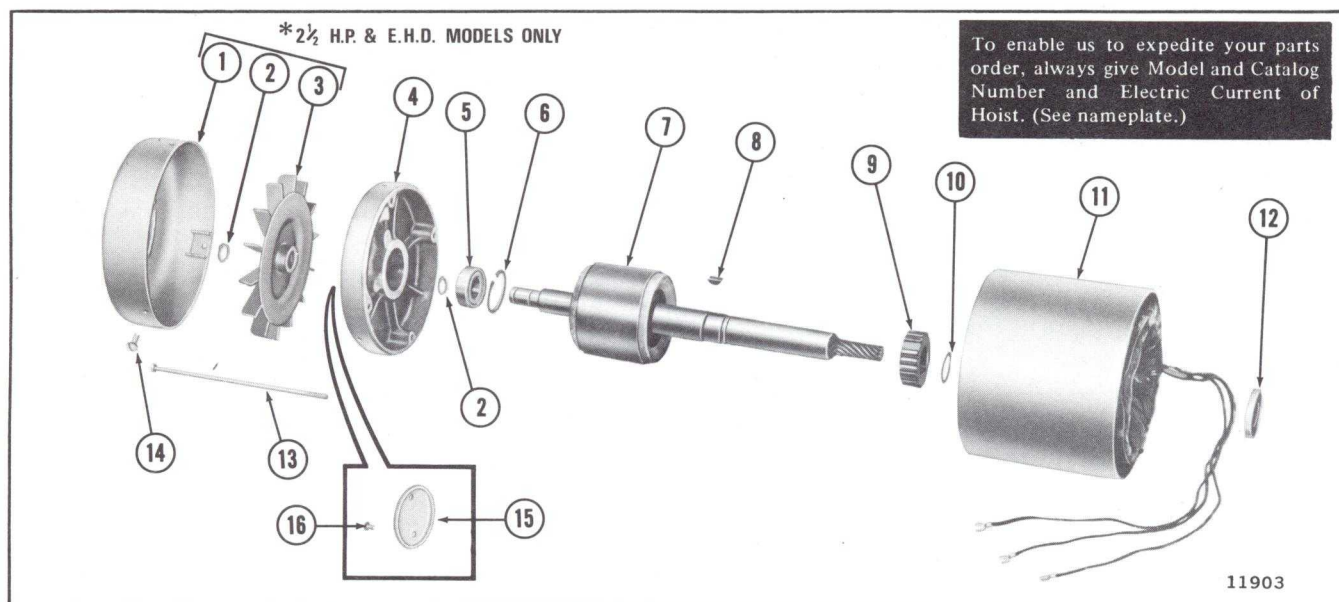


Figure 9-15. THREE PHASE MOTOR ASSEMBLY — EXPLODED VIEW

| Ref. No. | Part Number      | Description                                                              | Qty. Req'd. |
|----------|------------------|--------------------------------------------------------------------------|-------------|
|          | (Fig. 9-16&9-17) | Motor Assembly — Complete                                                | 1           |
| 1*       | BH-2504          | Guard — Fan                                                              | 1           |
| 2**      | BH-2407          | Ring — Retaining, external                                               | 2           |
| 3*       | BH-2505          | Fan                                                                      | 1           |
| 4        | BH-2506          | Bell — End (With Tapped Holes for Fan Guard)                             | 1           |
|          | BH-2405          | Bell — End (Without Tapped Holes)                                        | 1           |
| 5        | BH-2507          | Bearing Assembly — Ball (2½ H.P. Motors & Extra Heavy Duty Hoist Motors) | 1           |
|          | BH-2408          | Bearing Assembly — Ball (¼, ½ & 1 H.P. Std. Hoist Motors)                | 1           |
| 6        | BH-2409          | Ring — Retaining, internal                                               | 1           |
| 7        | (Fig. 9-16&9-17) | Rotor & Shaft Assembly                                                   | 1           |
| 8        | BH-2411          | Key — Woodruff                                                           | 1           |
| 9        | BH-2412          | Hub — Motor Brake, splined                                               | 1           |
| 10       | BH-2413          | Ring — Retaining, external                                               | 1           |
| 11       | (Fig. 9-16&9-17) | Stator Assembly                                                          | 1           |
| 12       | BH-2532          | Seal — Oil, Motor shaft (¼, ½ & 1 H.P. Extra Heavy Duty Hoist Motors)    | 1           |
| 13       | BH-2502          | Bolt — Motor Mounting (All ¼, ½ & 1 H.P. Motors)                         | 4           |
|          | BH-2442          | Bolt — Motor Mounting (2½ H.P. Motors)                                   | 4           |
| 14*      | BH-2533          | Screw — Self tapping                                                     | 3           |
| 15       | BH-2402          | Cover — Motor Shaft (Motors Without Fan)                                 | 1           |
| 16       | BH-2401          | Screw — Round Head Self Tapping                                          | 2           |

\*Used only on 2½ H.P. motors and ¼, ½ and 1 H.P. extra heavy duty hoist motors.

\*\*Quantity of 1 used on motors without fan.

## NOTES



Figure 9-16. REPLACEMENT MOTOR TABLE – STANDARD MODEL HOISTS  
(Includes: Motor Assemblies, Rotor and Shaft Assemblies and Stator Assembly)

| Motor H.P. | Hoist Model Used On   | A. C. Voltage | Part Number     |                        |                     |
|------------|-----------------------|---------------|-----------------|------------------------|---------------------|
|            |                       |               | *Motor Assembly | Rotor & Shaft Assembly | *** Stator Assembly |
| 1/4        | STANDARD MODEL HOISTS | 115-1-60      | BH-2603         | BH-2612**              | BH-2621             |
|            |                       | 230-1-60      | BH-2604         | BH-2613**              | BH-2622             |
|            |                       | 208-3-60      | BH-2706         | BH-2740                | BH-2766             |
|            |                       | 575-3-60      | BH-2709         | BH-2740                | BH-2769             |
|            |                       | 230/460-3-60  | BH-2710         | BH-2740                | BH-2770             |
| 1/2        | STANDARD MODEL HOISTS | 115-1-60      | BH-2607         | BH-2616**              | BH-2625             |
|            |                       | 230-1-60      | BH-2608         | BH-2617**              | BH-2626             |
|            |                       | 208-3-60      | BH-2716         | BH-2750                | BH-2776             |
|            |                       | 575-3-60      | BH-2719         | BH-2750                | BH-2779             |
|            |                       | 230/460-3-60  | BH-2720         | BH-2750                | BH-2780             |
| 1          | STANDARD MODEL HOISTS | 230-1-60      | BH-2630         | BH-2631**              | BH-2632             |
|            |                       | 208-3-60      | BH-2726         | BH-2760                | BH-2786             |
|            |                       | 575-3-60      | BH-2729         | BH-2760                | BH-2789             |
|            |                       | 230/460-3-60  | BH-2730         | BH-2760                | BH-2790             |
| 2 1/2      | STANDARD MODEL HOISTS | 208-3-60      | BH-2791         | BH-2795                | BH-2797             |
|            |                       | 575-3-60      | BH-2793         | BH-2795                | BH-2799             |
|            |                       | 230/460-3-60  | BH-2792         | BH-2795                | BH-2798             |

\*Motor Assemblies include brake discs & plates.

\*\*Above rotor and shaft assemblies include the centrifugal switch, brake spring, brake plunger, brake hub, and retaining ring.

\*\*\*Stator Assemblies for single phase motors include stationary switch, capacitor, capacitor cover and cover mounting screws.

Figure 9-17. REPLACEMENT MOTOR TABLE – EXTRA HEAVY DUTY MODEL HOISTS

| Motor H.P. | Hoist Model Used On    | A. C. Voltage | Part Number    |                        |                 |
|------------|------------------------|---------------|----------------|------------------------|-----------------|
|            |                        |               | Motor Assembly | Rotor & Shaft Assembly | Stator Assembly |
| 1/4        | Extra Heavy Duty Hoist | 575-3-60      | BH-2536        | BH-2549                | BH-2522         |
|            |                        | 208-3-60      | BH-2537        | BH-2549                | BH-2523         |
|            |                        | 230/460-3-60  | BH-2538        | BH-2549                | BH-2552         |
| 1/2        | Extra Heavy Duty Hoist | 575-3-60      | BH-2541        | BH-2550                | BH-2526         |
|            |                        | 208-3-60      | BH-2542        | BH-2550                | BH-2527         |
|            |                        | 230/460-3-60  | BH-2543        | BH-2550                | BH-2553         |
| 1          | Extra Heavy Duty Hoist | 575-3-60      | BH-2546        | BH-2551                | BH-2530         |
|            |                        | 208-3-60      | BH-2547        | BH-2551                | BH-2531         |
|            |                        | 230/460-3-60  | BH-2548        | BH-2551                | BH-2554         |